

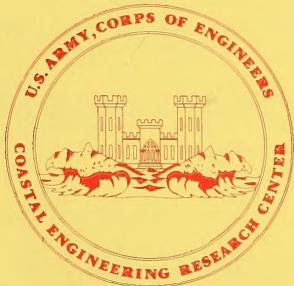
Benthic Community Response to Dredging Borrow Pits, Panama City Beach, Florida

by

Carl H. Saloman, Steven P. Naughton, and John L. Taylor

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Hydrological measurements were limited to water temperature and salinity. Analysis of surface sediments included particle-size distribution, carbon chemistry, and statistical properties of mean grain size, sorting, skewness, and kurtosis. Average and extreme periods of water temperature and salinity were recorded. Regional nearshore sediments proved to be fine sand, containing less than 1 percent silt-clay, that was moderately well to well sorted, symmetrical to coarsely skewed, and leptokurtic. Total carbon content averaged less than 0.30 percent, and most of that occurred in the form of carbonate deposits. Over a postdredging study period of 1 year, sediment samples from borrow pits showed little variation from these general features.

In studies of the benthos, 362 species and 58,068 individuals were recorded among 14 invertebrate phyla and bony fishes. Dominant groups by species and abundance included annelida, mollusca, and arthropoda (crustacea). Faunal comparisons between dredged and undredged areas were made on the basis of species richness and abundance, the Shannon-Weaver index of diversity (H'), Pielou's index of equitability (J'), Morisita's index of faunal similarity (together with matrices and classification diagrams derived from that index), and two statistical derivations, based on diversity and abundance data, that were designed to show sample-to-sample faunal variations and the time period required for faunal recovery in borrow pits. Information obtained from these procedures showed that recovery began soon after dredging and was complete, or nearly so, within 1 year.

These results were similar in most respects to those from study of offshore dredging elsewhere in comparable geographic settings. Even so, the need for close association between ecological research and coastal engineering programs is emphasized.

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PREFACE

This report gives preconstruction and postconstruction environmental data related to short-term effects of beach nourishment at Panama City Beach, Florida. Areas of study included water quality, sediments, and benthic invertebrates. Dredging and beach restoration were done by the U.S. Army Engineer District, Mobile, and research was sponsored by the U.S. Army Coastal Engineering Research Center (CERC), and by the National Marine Fisheries Service (NMFS), Gulf Fisheries Center, Panama City Beach, Florida. The work was carried out under the coastal ecology research program.

The report is based on data collected and compiled by Carl H. Saloman and Steven P. Naughton, NMFS, who assisted Dr. John L. Taylor, Taylor Biological Company, Inc., in preparing the report under CERC Contract No. DACW72-81-M-0198. Invaluable assistance with statistical programs and data processing was provided by Dr. S.A. Bloom, Department of Zoology, University of Florida, Gainesville. Editorial reviews were provided by E. Nakamura, NMFS, and by B. Hall, CERC.

The authors acknowledge the assistance of their colleagues for identification of the following faunal groups: Dr. R.W. Heard, Jr., Gulf Coast Research Laboratory, Ocean Springs, Mississippi (crustacea); and J.R. Hall, National Marine Fisheries Service, Washington, D.C. (mollusca). Identification of species in other groups was done by the authors with the aid of reference material available from NMFS.

E.J. Pullen, Chief, Coastal Ecology Branch, served as contract monitor for this report, under the general supervision of R.P. Savage, Chief, Research Division; he also assisted in the editorial review process and made arrangements for several technical aspects of manuscript preparation and publication.

Comments on this publication are invited.

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TED E. BISHOP

Colonel, Corps of Engineers
Commander and Director

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CONVERSION FACTORS, U.S. CUSTOMARY TO METRIC (SI) UNITS OF MEASUREMENT

U.S. customary units of measurement used in this report can be converted to metric (SI) units as follows:

Multiply	by	To obtain
inches	25.4	millimeters
	2.54	centimeters
square inches	6.452	square centimeters
cubic inches	16.39	cubic centimeters
feet	30.48	centimeters
	0.3048	meters
square feet	0.0929	square meters
cubic feet	0.0283	cubic meters
yards	0.9144	meters
square yards	0.836	square meters
cubic yards	0.7646	cubic meters
miles	1.6093	kilometers
square miles	259.0	hectares
knots	1.852	kilometers per hour
acres	0.4047	hectares
foot-pounds	1.3558	newton meters
millibars	1.0197×10^{-3}	kilograms per square centimeter
ounces	28.35	grams
pounds	453.6	grams
	0.4536	kilograms
ton, long	1.0160	metric tons
ton, short	0.9072	metric tons
degrees (angle)	0.01745	radians
Fahrenheit degrees	5/9	Celsius degrees or Kelvins ¹

¹To obtain Celsius (C) temperature readings from Fahrenheit (F) readings, use formula: $C = (5/9) (F - 32)$.

To obtain Kelvin (K) readings, use formula: $K = (5/9) (F - 32) + 273.15$.

BENTHIC COMMUNITY RESPONSE
TO DREDGING BORROW PITS,
PANAMA CITY BEACH, FLORIDA

by

*Carl H. Saloman, Steven P. Naughton,
and
John L. Taylor*

I. INTRODUCTION

1. Background.

On the gulf coast of northwestern Florida, at Panama City Beach, major environmental alterations over the past 10 years have provided an exceptional opportunity to determine the degree and duration of these alterations associated with the practice of dredging and beach nourishment. Historically, these events have included the development of several engineering plans, the intervention of a major hurricane, an emergency dredging and beach restoration program, and several ecological studies related to disturbances caused by both the hurricane and the dredging.

In 1970, the Senate Committee on Public Works acknowledged an urgent need for beach erosion control and hurricane protection at Panama City Beach. This critical situation was referred to the U.S. Army Engineer District, Mobile, for study. In 1975, the Mobile District completed a feasibility report that contained recommendations for beach nourishment and maintenance along 29.8 kilometers of shoreline from the entrance to St. Andrew Bay, west to Philips Inlet (Wilson, 1975). During preparation of the report, the U.S. Army Coastal Engineering Research Center (CERC) sponsored a research program to determine ecological changes that could be expected from the dredging and coastal construction work. This investigation, which was conducted by the National Marine Fisheries Service (NMFS) between November 1974 and October 1975, involved the study of hydrology, sediments, and benthic fauna at two offshore stations, and at five stations on each of nine nearshore transects. Emphasis was placed on diversity, abundance, and distribution of bottom-dwelling invertebrates which are directly affected by dredging and redistribution of sediments (Saloman, 1976).

Before this investigation was completed, Hurricane Eloise struck Panama City Beach (25 September 1975). Winds up to 185 kilometers per hour and seas estimated at 9 meters caused severe erosion and extensive property damage (Saloman, 1976; Salsman and Ciesluk, 1978). In winter months that followed, high wind and waves associated with periodic cold fronts caused further shoreline erosion.

In anticipation of the storm, and realizing the opportunity to measure large-scale environmental changes alongshore, NMFS conducted an intertidal benthic survey that consisted of faunal sampling before the storm and during a 1-month period after the storm. The pattern of faunal disruption and recovery recorded in this unique study provided considerable insight into the sequence of population changes to be expected in the proposed beach nourishment program (Saloman and Naughton, 1977).

In the next year (July-August 1976), the Corps of Engineers funded an emergency dredging operation to restore the most ravaged beach areas and established berms to provide temporary protection against storms normally occurring during fall and winter seasons. Numerous borrow areas, 305 to 610 meters offshore (6- to 9-meter depth) were dredged and about 306,000 cubic meters of sand was pumped ashore at 23 distribution sites (U.S. Army Engineer District, Mobile, 1976).

At the same time, NMFS again conducted studies of the nearshore environment over a 3-month period prior to dredging, during dredging, and for about 6 months after dredging was completed. Benthic sampling sites were selected in nourishment areas and in unrestored areas. The location of the three nourishment areas coincided with the location of benthic base-line data collected in 1974 (Saloman and Naughton, unpublished data).

Based on emergency nourishment experience and the analysis of the Hurricane Eloise data collected, the Mobile District revised original plans for shoreline protection and maintenance at Panama City Beach. The revised plan included berm enlargement on the beach front and additions to height and width of backbeach dunes. Consequently, the volume of sand estimated for original construction was increased from 4 to 8 million cubic meters; and borrow areas formerly selected at 9-meter depths were relocated seaward along the 18-meter bottom contour (Wilson, 1976).

Onshore, the environmental impact of this latest plan can probably be predicted to a high degree of accuracy on the basis of findings in NMFS beach surveys in 1974 and 1976. Briefly stated, the results of these investigations showed that shallow, subtidal and intertidal faunas recover rapidly following major disturbances (natural or man-induced). A more recent study funded by CERC provides additional information on the long-term environmental effects of dredging in offshore borrow areas at Panama City Beach (Culter and Mahadevan, 1982). A study of short-term environmental effects of dredging in offshore borrow areas at Panama City Beach is the subject of the present report.

2. Purpose.

This report provides a comprehensive analysis of benthic data from studies designed to show short-term environmental effects of offshore dredging during the emergency restoration project at Panama City Beach in July-August 1976.

It is based on comparisons of hydrological, sedimentological, and biological data from collections at stations A and B in base-line studies that began in 1974 (Saloman, 1976), and from control and experimental samples taken by NMFS in undredged bottom and borrow areas over a 20-month period between April 1976 and November 1977.

II. STUDY AREA

Panama City Beach is located on the northwestern gulf coast of Florida about 145 kilometers east of Pensacola. The study area covers 35 kilometers and extends from West Pass at the entrance to St. Andrew Bay, to Philips Inlet (Fig. 1). The beach's sugarlike sand and exceptionally clear water are major attractions for about 2 million visitors annually. Tourism is a great economic asset and most of the beach has been developed to accommodate tourists and provide various types of recreation.

Regional meteorological and oceanographic conditions were described by Salsman and Ciesluk (1978). Climate is humid and subtropical. Average summer and winter air temperatures are 28° and 12° Celsius, with about the same water temperatures at respective seasons. Winds are 20 kilometers per hour or less at most times, and rarely exceed 37 kilometers per hour. From spring through late summer, the net wind direction is southerly, but between September and January, the direction shifts to northerly. Waves are usually about 0.9 meter; tides are diurnal, and tidal amplitude is normally about 0.6 meter; and tidal currents are generally below 4 kilometers per hour. However, during tropical storms and ahead of cold fronts, strong winds off the gulf produce waves, tides, and currents far greater than average. Even in less severe weather, beach sand is easily eroded because of its fine texture (0.1- to 0.2-millimeter median diameter). Seaward, a series of parallel sandbars protects the beach to some extent, but beyond, the featureless bottom slopes rather quickly to a 15-meter depth at 1.6 kilometers from shore. At greater depths, sediments are somewhat coarser and widely scattered limestone reefs appear in low relief.

III. SAMPLING STATIONS AND RATIONALE

The sampling data in this report were collected in about 9 meters of water at stations located offshore of Panama City Beach. As a matter of convenience, and for clarity, these stations have been separated into three groups since there were differences in their locations, sampling procedures, and objectives.

The first group includes stations A and B (Fig. 2) of the preconstruction investigation of 1974-75. Station A was located seaward of the Fiesta Motel about midway between West Pass and Philips Inlet. Station B was seaward of the Roundtower Motel, which is just east of Philips Inlet. The sampling schedule at these stations consisted of an initial collection in November 1974, and subsequent quarterly collections in February, May, and August 1975. Both were sampled before beach nourishment to determine seasonal environmental conditions (base-line data) in the zone designated for dredging (Saloman, 1976).

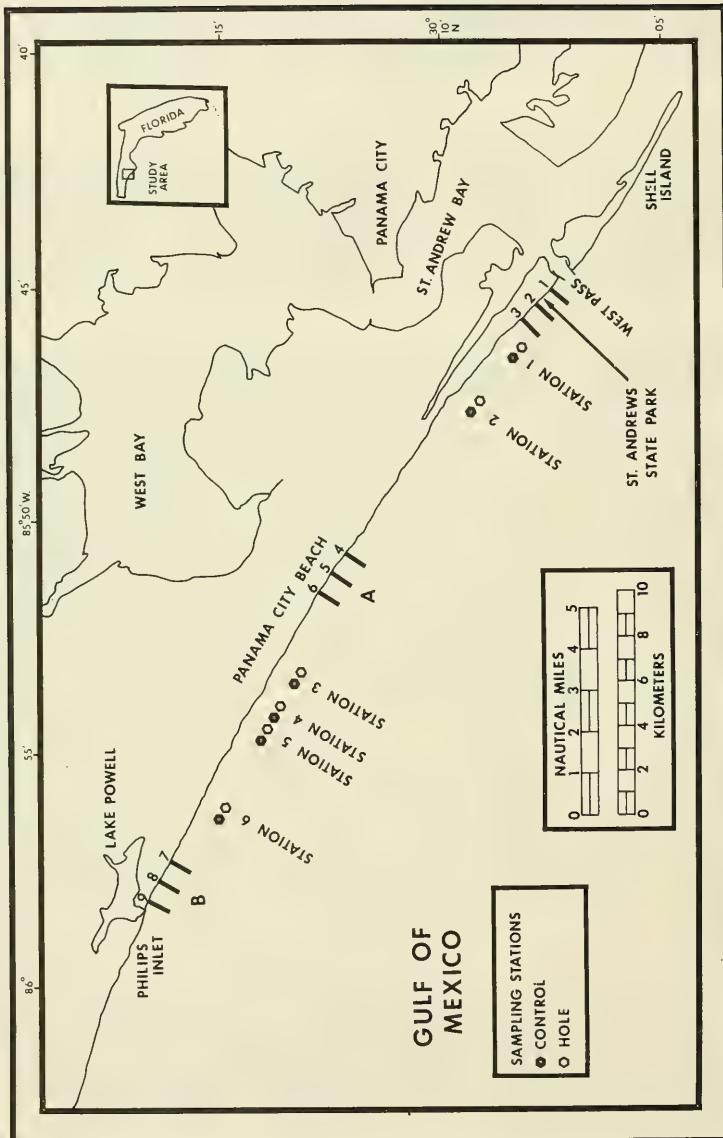
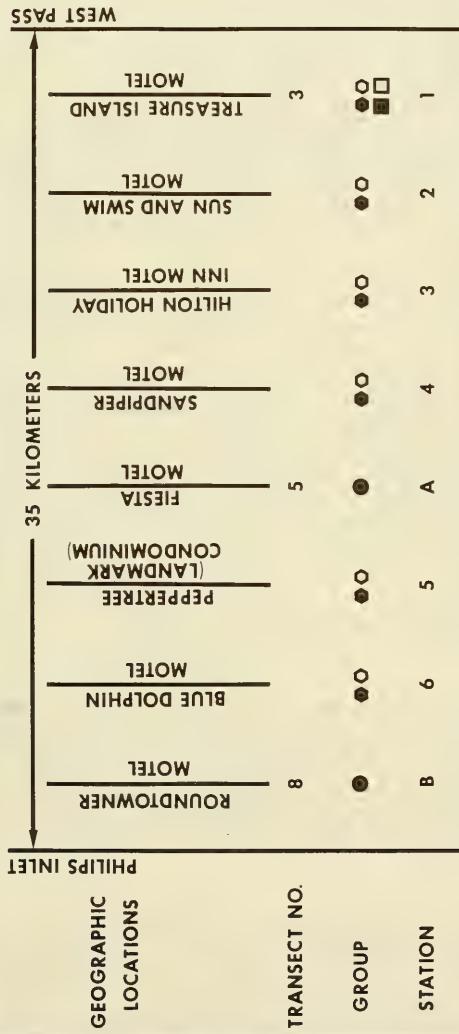


Figure 1. Study area at Panama City Beach, Florida, showing stations 1 to 6, July 1977.



SAMPLE GROUP SYMBOL DESCRIPTION

- I ● (CONTROL) STATIONS A AND B, PRECONSTRUCTION, 4-REPLICATES PER SAMPLE
- II □ (EXPERIMENTAL) STATION 1, PRE AND POSTCONSTRUCTION, 32, 36, OR 16 REPLICATES PER SAMPLE
- III ■ (CONTROL) STATION 1, PRE AND POSTCONSTRUCTION, 32, 36, OR 16 REPLICATES PER SAMPLE
- IV ○ (EXPERIMENTAL) STATIONS 1 TO 6, POSTCONSTRUCTION, 40 REPLICATES PER SAMPLE
- V ◆ (CONTROL) STATIONS 1 TO 6, POSTCONSTRUCTION, 40 REPLICATES PER SAMPLE

Figure 2. Schematic representation of sampling plan, Panama City, Florida.

The second group contains station 1 (Fig. 2), located seaward of Treasure Island Motel (near the eastern end of the study area), which had two collecting areas--one at the borrow site and the other a short distance away on undredged bottom. Samples were taken from the designated borrow site before dredging in April, June, and July 1976. Then 2 days after dredging (10 August 1976), concurrent sampling was started inside and outside the borrow pit. Sampling in both the pit (experimental samples) and adjacent to it (control samples) continued on a weekly schedule for 1 month. Samples were taken twice the next month, and then monthly thereafter until the study was concluded in November 1977. These samples were collected to record diversity and abundance of benthic fauna at a specific dredge site before dredging started, and then, over time, to compare population characteristics of control samples with experimental samples.

The third group includes stations 1, 2, 3, 4, 5, and 6 for one-time sampling only inside and outside borrow pits during July 1977--about 12 months after dredging (Fig. 2). The six stations were located seaward of the following landmarks: station 1, Treasure Island Motel; station 2, Sun and Swim Motel; station 3, Hilton Holiday Inn, station 4, Sandpiper Motel; station 5, Peppertree Condominium (now Landmark Condominium); and station 6, Blue Dolphin Motel. These collections provided a comparison of fauna in control and experimental samples from a number of borrow pits for an evaluation of short-term recovery within a period of 1 year. Throughout this report, samples from stations A and B, and preconstruction samples from station 1, are referred to as baseline or control samples; all other samples from outside borrow pits are called control samples, and all samples from within borrow pits are designated experimental samples.

IV. SAMPLING AND ANALYTICAL PROCEDURES

1. Hydrology.

Surface water temperature and salinity measurements were recorded in each sampling period at stations A and B, and on a monthly schedule over the duration of sampling at station 1. Temperature was taken using a hand-held, mercury bulb thermometer graduated in Celsius degrees. Salinity, in parts per thousand, was determined with a Goldberg temperature-compensated refractometer (American Optical Co., Model No. 10419).

2. Sedimentology.

Sediment samples were collected to determine textural features, statistical properties, and carbon chemistry. Textural parameters included weight percentages of granules, sand, and silt-clay. Mean grain size, standard deviation (as a measure of sorting), skewness, and kurtosis were calculated and interpreted according to the system described by Folk (1974). The carbon analyses included total carbon, total organic carbon, and total carbonate carbon.

Collections were limited to surface samples that included the upper 10 centimeters of sediment. Sediments were collected in standard 8-ounce, screw-cap jars; all samples were stored frozen prior to analyses. Detailed analytical methods are described by Saloman (1976).

For textural analyses, sediment samples were sieved at 1-phi intervals in nested screens placed on a mechanical shaker. Fraction weights were recorded to the closest milligram and tabulated as weight percentages. No hydrometer or pipette determinations were required because silt-clay percentages were quite low. Based on grain-size distribution curves, formulas introduced by Folk (1974) were used to calculate statistical properties. Carbon analyses were made using a Leco 750-100, 90-second carbon analyzer.

Additionally, divers recorded observations of sediment inside and outside the borrow pit at station 1. These observations were made on a regular basis during the first postconstruction collection, and in subsequent collections, until the study ended.

3. Benthos.

At all collecting points, infauna was sampled with a hand-operated plug sampler (box corer) that covered a surface area of 1/64 square meter and penetrated the bottom to a depth of 23 centimeters (Saloman, 1976). Replicate samples were taken at each site, but the number was not always the same for each of the three station groups. At stations A and B, four replicates composed a sample (preconstruction base-line study of 1974-75). At station 1, the first collection contained 32 replicates (19 April 1976), while second and third preconstruction samples each consisted of 36 replicates. After dredging, however, both control and experimental samples from station 1 each included 16 replicates. Finally, in the one-time collection at stations 1 to 6, 1 year after dredging, control and experimental samples were each composed of 40 replicates. The decision to take more than 4 replicates in most samples was somewhat arbitrary, since sampling to develop a species rarefaction curve showed that 4 plugs comprised an adequate qualitative and quantitative sample of the nearshore benthos (Saloman, 1976). For reference, a schematic representation of the overall sampling plan was prepared to show geographic relationships among stations within the study area, landmarks along the shore, pertinent transect locations from studies started in 1974, and the sampling locations of borrow pits and undredged bottom studied between April 1976 and July 1977 (Fig. 2).

All benthic samples were taken by scuba divers and sieved on shipboard in a 0.3-meter diameter screen of 0.7 millimeter mesh. Material remaining on the screen was preserved with 10-percent seawater formalin in standard 2-quart, screwcap jars. Rose bengal dye was added to the formalin to stain organisms and facilitate their subsequent separation from debris. In the laboratory,

each collection was resieved under tapwater and all specimens from respective samples were stored in 70-percent isopropanol for final sorting, taxonomic determinations, and species counts. The 0.7 millimeter screen was used instead of a conventional 0.5 millimeter one because the former facilitated sieving operations and retained a percentage of infauna that was shown to be very nearly equivalent to that sampled by the smaller mesh size.

As in Saloman's (1976) work, biological data presented here include a species checklist and individual station listings that show species occurrence and frequency, together with calculations for number of individuals per square meter and the Shannon-Weaver index of faunal diversity (H'). Also, as a measure of relative species dominance, equitability (J') was computed for each station (Pielou, 1975). Two other statistical procedures were also employed. The first, Morisita's Index (Morisita, 1959; Bloom, 1981), provided a numerical method of comparing faunal similarity between comparable sets of control and experimental samples, and was used to develop similarity matrices and classification diagrams that graphically show faunal relationships based on station data for diversity and abundance.

The second procedure, a stability analysis (Bloom, 1980), is a multivariate, nonparametric statistical and geometric procedure that converts biotic data from control and experimental samples into communities that can be represented mathematically. For one representation all base-line and control data were used to define numerical characteristics of a preconstruction community cluster that has a central point, or centroid, and certain specific spatial limits. In the first stability analysis, the distance from the centroid to control and experimental samples was used to determine variability among samples from undredged and dredged bottoms. In the second analysis, community clusters calculated for experimental samples were compared to the preconstruction cluster, in postconstruction sequence. When a boundary of an experimental cluster met the limit of the preconstruction cluster, faunal recovery was accepted. Experimental collections from station 1, where sampling over time was done, were the only borrow pit samples used in this analysis.

V. RESULTS

1. General.

The findings in this section are based on the detailed information given in Appendixes A to F. Appendix A lists abiotic parameters by station. Appendix B is a checklist of all organisms collected at offshore stations from November 1974 to November 1977. Appendix C contains all biological station data and indices of diversity (H') and equitability (J'). Appendix D (Similarity Matrices) and E (Classification Analyses and Dendograms) are both based on Morisita's index of faunal similarity. Appendix F is a graphic representation of the two stability analyses. The first graph shows comparative variability among control and experimental samples when compared with the centroid of a community cluster calculated from all base-line and control samples. The second

is a stability plot for experimental samples from station 1 showing the post-construction time lapse before faunal recovery appears evident.

2. Hydrology.

Water temperature and salinity data from the 1974-75 sampling at stations A and B were compared to data from station 1 sampled during similar months in 1976-77 (Table 1). Both sets of data show normal seasonal trends in water temperature, except for one abnormally low value of 9° Celsius recorded in February 1977.

Salinity was low at stations A and B in August 1975, but salinity during other months was 32 parts per thousand or higher, and similar to station 1 records (Table 1). Appreciable declines in salinity apparently coincide with periods of seasonally heavy rainfall.

3. Sedimentology.

The influence of dredging on sediment composition was determined by analyses of base-line and control samples, compared to samples taken from borrow pits. Base-line data came from seasonal sediment collections at stations A and B, and from those taken before dredging at station 1 in April, June, and July 1976. Control data were available from samples outside the borrow pit at station 1, and from samples collected in an undredged bottom at stations 1 to 6 in July 1977. Data from experimental samples also came from periodic collections at station 1, and from borrow pit collections in the single survey in July at stations 1 to 6.

Textural, statistical, and chemical properties of base-line samples (Table 2) were used to describe natural features of offshore sediments, since these samples were collected in all seasons prior to dredging at eastern, central, and western locations within the study area (see App. A).

a. Texture. Sediment composition was about 99-percent sand, and both granules and silt-clay size particles contributed less than 1 percent.

b. Statistical Properties. Values for mean grain size, standard deviation, skewness, and kurtosis classified these sediments as fine sand that is moderately well to well sorted, symmetrical to coarsely skewed, and leptokurtic (sorted better in the center than at the ends of grain size distribution curves).

c. Carbon Chemistry. Total carbon content of base-line samples was less than 0.30 percent. Carbonate carbon contributed somewhat more to this total than organic carbon, indicating that most carbon occurred in the form of shell fragments rather than as organic deposits.

For station 1, when these features were compared to control and experimental samples, noteworthy differences appeared only in experimental samples.

Table 1. Water temperature and salinity at stations A and B before the 1974-75 dredging, and at station 1 before and after the 1976 dredging for beach nourishment at Panama City Beach, Florida.

Station	Date	Water Temp. (°C)	Salinity (ppt)
<u>1974</u>			
A	18 Nov.	21.0	34.5
B	18 Nov.	20.8	34.3
<u>1975</u>			
A	20 Feb.	17.4	34.4
B	20 Feb.	17.5	33.9
A	20 May	26.2	32.2
B	20 May	26.0	32.2
A	12 Aug.	28.3	26.2
B	12 Aug.	28.5	26.1
<u>1976</u>			
(before)	Apr.	20.2	33.3
	May	20.2	34.9
	June	25.7	32.3
	July	28.0	33.3
	Aug.	27.0	35.3
	Sept.	27.8	32.6
	Oct.	24.9	33.1
	Nov.	18.0	33.2
	Dec.	12.5	34.1
<u>1977</u>			
(after)	Jan.	12.4	33.3
	Feb.	9.0	34.3
	Mar.	14.3	34.4
	Apr.	22.4	33.5
	May	21.8	34.3
	June	25.7	32.1
	July	27.5	33.6
	Aug.	29.0	35.3
	Sept.	27.7	32.6
	Oct.	25.0	33.1
	Nov.	-	-

Table 2. Textural and statistical properties of sediments in control (undredged bottom) and experimental (borrow pit) samples taken 1 year after dredging at stations 1 to 6 along the 9-meter depth contour off Panama City Beach, Florida, July 1977.

Station	Textural			Statistical			
	Granule (pct.)	Sand (pct.)	Silt-clay (pct.)	Mean grain size (phi)	Std. dev. (phi)	Skewness	Kurtosis
1 Control	99.70	0.30		2.45	0.45	-0.19	1.18
Experimental	98.64	1.36		2.50	0.53	-0.00	1.39
2 Control	99.65	0.35		2.45	0.44	-0.18	1.15
Experimental	99.80	0.20		2.43	0.48	-0.19	1.21
3 Control	99.88	0.12		2.21	0.62	-0.32	1.11
Experimental	0.92	98.96	0.11	1.75	1.06	-0.46	0.82
4 Control	99.86	0.14		2.24	0.61	-0.31	1.16
Experimental	0.08	99.81	0.11	2.01	0.83	-0.41	0.95
5 Control	99.86	0.14		2.31	0.59	-0.33	1.34
Experimental	99.86	0.14		2.26	0.58	-0.28	1.11
6 Control	0.34	99.52	0.14	2.11	0.76	-0.40	1.09
Experimental	0.14	99.76	0.11	2.31	0.61	-0.34	1.39

The particle-size distribution of sand was below 99 percent in experimental samples from September, October, and November 1976, and from January, June, July, August, and September 1977. The lowest level (92 percent) was recorded in September 1976. Other low values were only in the 97- to 98-percent range. Granule-size particles were consistently under 1 percent, but 11 experimental samples contained more than 0.30-percent silt-clay. The highest value for the silt-clay fraction was 8.1 percent in a sample collected on 21 September 1976. Values of more than 1-percent silt-clay were also recorded in another September sample as well as in October and November 1976, and again in January, June, July, August, and September 1977.

Mean grain size for experimental samples did not range below fine sand. Sorting categories changed for two experimental samples. In the September 1976 sample, sorting was only moderate; in the May 1977 sample, it proved to be extremely poor. For skewness, five experimental samples exhibited an uncharacteristic trend that placed them in classifications of fine skewed to strongly fine skewed. The single sample classified as strongly fine skewed was obtained in September 1976; the others were collected in September and October 1976, and August and September 1977. Deviation from the normal leptokurtic condition was recorded for five experimental samples. Values corresponding to mesokurtic were recorded in August 1976, and April and May 1977. Values in the very leptokurtic range were recorded in January and June 1977.

A carbon content percentage greater than the base-line average was recorded in 12 experimental samples; however, this number of samples may be low since no carbon analyses were made after the June 1977 sampling. The highest recorded value was 2.32 percent for the September 1976 sample. Other slightly elevated values ranged between 0.31 and 1.21 percent. Among these 12 samples, the proportion of organic carbon to carbonate carbon was higher for carbonate in 6 samples, higher for organic in 5, and in 1, the ratio was nearly even.

Sediment data for control and experimental samples collected at the six stations in July 1977 has been tabulated for comparison (Table 2). These analyses include only textural and statistical properties; no information on carbon chemistry was available.

At the six stations, granule-size particles were present in only four samples, and three of these came from borrow pits at stations 3, 4, and 6. The single control sample containing granules also came from station 6, and the overall granule distribution was under 1 percent. Sand content was about 99 percent in all collections. For the silt-clay fraction, only one value was considered abnormally high and that was recorded for the experimental sample from station 1 (1.36 percent).

With the one exception of medium sand (station 3, experimental), all samples fell into the classification of fine sand. Calculations for sorting showed that 9 of 12 samples were well to moderately well sorted. Other classifications included moderately sorted (station 4, experimental and station 6, control) and

poorly sorted (station 3, experimental). Skewness values were characteristic for five samples (symmetrical to coarsely skewed), and the other seven samples fit the strongly coarse-skewed classification and were about equally divided between the control and experimental samples. The normal, or leptokurtic condition, was found in nine samples. Of the remaining three, the experimental sample from station 4 and the control sample from station 6 were mesokurtic, while the experimental sample from station 3 was platykurtic.

Although sedimentological conditions in some experimental samples varied from the base-line criteria until late 1977, large variations were confined to borrow pit sediments at station 1 within 2 months after dredging. During that period, properties which may have been limiting to benthos were high silt-clay and organic carbon content.

Diver reports between 18 August (10 days after dredging) and 4 October 1976, stated that the station 1 borrow pit was 3 to 5 meters deep and had very dark surface sediments of an extremely soft, silty texture. Initially no surface signs of benthic life (burrows, mounds, or trails) were reported. Within the next month, sediments had become firmer and sandier; signs of infauna activity were conspicuous, crabs and other epibenthos were numerous, and a variety of fishes was observed. After 12 months, and on the last dive at station 1 in November 1977, divers concluded that borrow pits had filled to within a meter of surrounding bottom, and that sediments inside were still finer, darker, and less compact than sediments outside, but marine life appeared similar in control and experimental areas.

4. Benthos.

The checklist of organisms in Appendix B contains about 362 organisms at the species level, representing 14 invertebrate phyla and the vertebrate class, Osteichthyes (bony fishes). Of this number, Annelida had 152 species (42 percent), Arthropoda had 108 (30 percent), and there were 69 mollusks (19 percent). The remaining 33 species (9 percent) were divided among 11 groups: Cnidaria, Platyhelminthes, Nemertinea, Nematoda, Phoronida, Brachiopoda, Sipunculida, Echiurida, Echinodermata, Hemichordata, and Cephalochordata.

Species counts from each station showed a total of 58,068 individuals collected. On a percentage basis, more than half were annelids (55 percent), 19 percent were mollusks, 18 percent were arthropods, Cnidaria and Cephalochordata each accounted for 2 percent, Nematoda and Echinodermata both had 1 percent, and the other seven groups contained 2 percent, collectively. For the three major phyla, species that were numerically dominant in one or more of the base-line or control site collections are given in Table 3.

All station data for richness, quantitative abundance, diversity (H'), and equitability (J') were tabulated by base-line, control, and experimental sample categories (Tables 4, 5, and 6). Graphic analyses of Morisita's Index and stability are given in Appendixes D, E, and F.

Table 3. Species in dominant phyla (listed alphabetically) that were numerically abundant at one or more base-line or control stations offshore Panama City Beach, Florida, November 1974 to November 1977.

MOLLUSCA

<i>Acteocina candei</i>	<i>Natica pusilla</i>
<i>Cyllichnella bidentata</i>	<i>Periploma margaritaceum</i>
<i>Diastoma varium</i>	<i>Pitar simpsoni</i>
<i>Ervilia concentrica</i>	<i>Strigilla mirabilis</i>
<i>Lepton</i> sp.	<i>Tellina texana</i>
<i>Lucina multilinea</i>	<i>Tellina versicolor</i>

ANNELIDA

<i>Armandia agilis</i>	<i>Nephtys buceria</i>
<i>Armandia maculata</i>	<i>Nephtys picta</i>
<i>Brania wellfleensis</i>	<i>Onuphis eremita oculata</i>
<i>Ceratonereis irritabilis</i>	<i>Onuphis nebulosa</i>
<i>Chone</i> sp.	<i>Owenia fusiformis</i>
<i>Displo uncinata</i>	<i>Paranoides lyra</i>
<i>Eteone lactea</i>	<i>Paranoides fulgens</i>
<i>Glycera americana</i>	<i>Parapriionospio pinnata</i>
<i>Goniada littorea</i>	<i>Prionospio crisiata</i>
<i>Haploscoloplos foliosus</i>	<i>Rullierineres mexicana</i>
<i>Lumbrineris cruzensis</i>	<i>Scolelepis texana</i>
<i>Lumbrineris tenuis</i>	<i>Scoloplos armiger</i>
<i>Lumbrineris tetraura</i>	<i>Spiophanes pettiboneae</i>
<i>Magelona riojai</i>	<i>Spiophanes bombyx</i>
<i>Magelona</i> sp.	Unidentified Oligochaete
<i>Mesochaelopterus sagittarius</i>	

ARTHROPODA

<i>Acanthohaustorius</i> sp.	<i>Monoculodes</i> sp.
<i>Albunea paretii</i>	<i>Oxyurostylis smithi</i>
<i>Ampelisca abdita</i>	<i>Processa hemphilli</i>
<i>Ampelisca verrilli</i>	<i>Protohaustorius</i> sp.
<i>Cyclaspis varians</i>	<i>Pseudohaustorius</i> sp.
<i>Cyclaspis</i> sp.	<i>Pseudoplatyischnopus</i> sp.
<i>Erichthionus</i> sp.	<i>Synchelidium</i> sp.
<i>Lepidactylus</i> sp.	Unidentified Ostracod

Table 4. Species richness, abundance, diversity (H'), and equitability (J') and base-line stations offshore Panama City Beach, Florida, November 1974 to July 1976.

Station	Date	Replicates per sample (No.)	Species (No.)	Individuals per m^2 (No.)	H'	J'
A	Nov. 1974	4	15	2,064	1.9	0.7
	Feb. 1975	27	3,008	2.2	0.7	
	May 1975	41	4,784	2.8	0.8	
	Aug. 1975	43	3,888	3.1	0.8	
	Avg. Range	32 15 to 43	3,436 2,064 to 4,784	2.5 1.9 to 3.1	0.8 0.7 to 0.8	
B	Nov. 1974	4	27	3,808	1.9	0.6
	Feb. 1975	26	3,984	2.3	0.7	
	May 1975	28	5,344	2.3	0.7	
	Aug. 1975	47	5,248	3.0	0.8	
	Avg. Range	32 26 to 47	4,596 3,808 to 5,344	2.4 1.9 to 3.0	0.7 0.6 to 0.8	
1	Apr. 1976	32	67	1,506	2.5	0.6
	June 1976	36	94	1,902	3.5	0.8
	July 1976	36	120	7,178	3.1	0.6
	Avg. Range	94 67 to 120	3,529 1,506 to 7,178	3.0 2.5 to 3.5	0.7 0.6 to 0.8	
	Overall Avg. Range	49 15 to 120	3,883 1,506 to 7,178	2.6 1.9 to 3.5	0.7 0.6 to 0.8	

Table 5. Species richness, abundance, diversity (H'), and equitability (J') at control stations offshore Panama City Beach, Florida, August 1976 to November 1977.

Station	Date	Replicates per sample (No.)	Species (No.)	Individuals per m^2 (No.)	H'	J'
1	10 Aug. 1976	16	72	5,576	2.4	0.6
	18 Aug. 1976		80	5,500	2.8	0.6
	24 Aug. 1976		84	4,836	2.9	0.6
	1 Sept. 1976		74	3,080	2.9	0.7
	8 Sept. 1976		83	2,260	3.4	0.8
	21 Sept. 1976		89	3,128	3.0	0.7
	4 Oct. 1976		87	3,116	3.3	0.7
	18 Oct. 1976		77	3,912	2.6	0.6
	1 Nov. 1976		67	3,020	2.6	0.6
	1 Dec. 1976		74	3,080	3.0	0.7
	5 Jan. 1977		56	1,724	3.0	0.8
	2 Feb. 1977		53	1,516	3.1	0.8
	1 Mar. 1977		64	2,360	3.1	0.7
	1 Apr. 1977		57	2,632	3.1	0.8
	2 May 1977		55	2,572	2.7	0.7
	1 June 1977		55	1,976	3.3	0.8
	5 July 1977		64	3,264	3.1	0.7
	2 Aug. 1977		80	5,168	3.0	0.7
	1 Sept. 1977		70	3,572	2.9	0.7
	3 Oct. 1977		64	2,112	2.8	0.7
	1 Nov. 1977		72	2,904	3.0	0.7
Avg. Range			70	3,205	3.0	0.7
			53 to 89	1,515 to 5,576	2.4 to 3.3	0.6 to 0.8
1	11 Jul. 1977	40	99	3,365	3.2	0.7
2	15 Jul. 1977	40	112	3,750	3.4	0.7
3	25 Jul. 1977	40	105	4,326	3.2	0.7
4	26 Jul. 1977	40	74	4,050	2.9	0.7
5	27 Jul. 1977	40	57	1,408	3.0	0.7
6	28 Jul. 1977	40	66	2,483	3.0	0.7
Avg. Range			86	2,817	3.1	0.7
			57 to 112	1,408 to 4,326	2.9 to 3.4	0.6 to 0.8
<u>Overall</u>			74	3,119	3.0	0.7
Avg. Range			53 to 112	1,408 to 5,576	2.4 to 3.4	0.6 to 0.8

Table 6. Species richness, abundance, diversity (H'), and equitability (J') at experimental stations offshore Panama City Beach, Florida, August 1976 to November 1977.

Station	Date	Replicates per sample (No.)	Species (No.)	Individuals per m^2 (No.)	H'	J'
1	10 Aug. 1976	16	20	324	2.0	0.7
	18 Aug. 1976		38	976	2.2	0.6
	24 Aug. 1976		60	2,136	2.6	0.6
	1 Sept. 1976		38	1,612	2.1	0.6
	8 Sept. 1976		47	1,344	2.7	0.7
	21 Sept. 1976		45	924	2.9	0.8
	4 Oct. 1976		85	2,440	3.7	0.8
	18 Oct. 1976		46	1,124	2.9	0.8
	1 Nov. 1976		55	2,044	2.5	0.6
	1 Dec. 1976		54	3,540	2.3	0.6
	5 Jan. 1977		36	2,192	1.8	0.5
	2 Feb. 1977		44	2,212	1.9	0.5
	1 Mar. 1977		62	3,732	2.6	0.6
	1 Apr. 1977		52	3,144	2.2	0.6
	2 May 1977		54	1,656	2.8	0.7
	1 June 1977		69	3,256	3.2	0.8
	5 July 1977		49	1,964	2.7	0.7
	2 Aug. 1977		70	2,920	3.2	0.8
	1 Sept. 1977		32	440	2.9	0.8
	3 Oct. 1977		61	1,588	3.1	0.8
	1 Nov. 1977		54	1,220	2.9	0.7
Avg. Range		51	1,942	2.6	0.7	
		20 to 85	324 to 3,732	1.8 to 3.7	0.5 to 0.8	
1	11 July 1977	40	81	2,422	2.9	0.7
2	15 July 1977	40	114	3,862	3.5	0.7
3	25 July 1977	40	98	4,037	3.3	0.7
4	26 July 1977	40	94	2,587	3.4	0.8
5	27 July 1977	40	80	2,644	2.9	0.7
6	28 July 1977	40	83	3,034	3.4	0.8
Avg. Range		92	3,101	3.2	0.7	
		80 to 114	2,422 to 4,037	2.9 to 3.5	0.7 to 0.8	
<u>Overall</u>		60	2,200	2.8	0.7	
<u>Avg. Range</u>		20 to 114	324 to 4,037	1.8 to 3.7	0.5 to 0.8	

a. Richness. The data from base-line and control samples indicate that species richness followed an irregular seasonal pattern. Generally, numbers of species were lowest in a period between late fall and spring, and showed one or more peaks sometime between midsummer and late fall.

For base-line collections (Table 4), the number of species per sample averaged 49 and ranged between 15 (November) and 120 (July). The average for control samples was 74 and ranged between 53 (February) and 112 (July). Intermediate values were recorded for experimental samples. In these collections, average number of species per sample was 60; the low, which was only 20, occurred in the first collection after dredging; the high was 114, recorded in July 1 year later.

On a date-to-date comparison at station 1 and stations 1 to 6, richness data for control and experimental samples (Tables 5 and 6) gave somewhat conflicting results. For time-sequence samples at station 1, richness data showed incomplete borrow pit recovery as numbers of species prove to be consistently higher for controls on every occasion except 1 June 1977. This was reflected in the average of 70 and the range between 53 and 89 for control samples, as opposed to an average of 51 and a range of 20 to 85 for experimental samples. Even so, a degree of recovery was evident at station 1 a few weeks after dredging, and richness data for control and experimental samples first approximated one another by October 1976. Species recorded in the early stages of recovery at station 1 are of special interest because they include survivors, migrants, and perhaps the first recruits (Table 7).

Contrary to indications of the incomplete recovery discussed above, results for richness in the one-time sampling at stations 1 to 6 showed that borrow pits generally supported more species than undredged bottom at 1 year. This was true for stations 2, 4, 5, and 6. Findings at station 1 were contradictory, and at station 3, species in experimental collections were outnumbered by those in control collections. The number of species in control samples averaged 86 and ranged between 57 and 112; the number for experimental samples was higher with an average of 92 and a range between 80 and 114.

Even though richness data are somewhat inconsistent, overall they indicate that faunal recovery began rapidly and was virtually complete throughout the study area in about 1 year. Data from the one-time sampling at six stations support this statement to a greater degree than those from regular time-sequence samples at station 1.

b. Abundance. Except for a few anomalies, seasonal cycles of faunal abundance coincided with periods of low and high species diversity, i.e., fewer animals were recorded in winter collections, and peak numbers generally occurred at various times between March and December. In base-line samples, numbers of individuals per square meter of bottom averaged 3,883 and ranged from 1,506 (April) to 7,178 (July). The average for control samples was 3,119, with a range between 1,408 (July) and 5,576 (August). Experimental samples had an

Table 7. Species and their frequency of occurrence in the first 3 weeks after dredging at station 1 offshore Panama City Beach, Florida, August 1976.

Species	No. of individuals (by date)		Species	No. of individuals (by date)	
	10 Aug.	18 Aug.		10 Aug.	18 Aug.
CNIDARIA					
Unid. sp.	1	1	ANELLA (Cont'd)		
Unid. sp.	1	1	Polydora tetrabranchia	1	1
Unid. sp.	2	2	Prionopeltis cristata	43	43
NEMERTINEA	1	3	Rutidermis mexicana	1	1
Unid. sp.	9	9	Scobiplos armiger	5	7
NEMATODA	1	1	Scobiplos rubra		1
Unid. sp.	19	19	Spiro pectiniferus		1
BRACHIOPODA	1	1	Spiophanes bombyx		1
Gloiotidea pyramidata	1	1	SIPONICULIDA		
MOLLUSCA	1	1	Golfingia trichocephala	1	
Caecum floridanum	1	1	ARTHROPODA		
Cardiuma costellata	1	1	Acanthothoracitus sp.	1	1
Leptonia sp.	4	4	Amphipoda abdita	3	27
Lucina multilobata	1	1	Amphipoda verrilli	1	
Periploma marginatum	1	1	Monoculoides sp.		
Pitar simpsoniaceum	3	3	Protobrachiosaurus sp.	4	1
Strigilla mirabilis	2	1	Pseudohausatorium sp.	1	1
Telina texanorum	18	23	Pseudoplatyschonus sp.	1	31
Telina versicolor	12	18	Synchelidium sp.	1	1
ANNELIDA	2	2	Albunea parelli	1	1
Unid. Oligochaete	2	2	Callianassa lamancencis	3	
Aporrhaispion pygmaea	1	1	Perichirus diogenes		
Armandia maculata	9	9	Perirosthes galanthinus		
Brania wellfleensis	1	1	Pinnixa retinens	1	1
Capitellides jonesi	1	1	Proctosoma vicina		
Caulieriella sp.	1	1	Cyclospis sp.		
Ceratonereis irritabilis	1	1	Cyclospis vorans	4	2
Dipatra caprea	1	2	Oxyurostomis smithi	5	3
Eteone lactea	1	4	Nebalia sp.	1	1
Eutelia sanguinea	1	1	Unid. Myioid	1	1
Glycera americana	1	3	Penaeus diorarum	2	1
Glycera dibranchiata	1	1	Sicyonia brevirostris	1	1
Glycera sp.	1	2	Sicyonia typica		
Glycinde solitaria	1	1	Acanthoquilla biminiensis		
Goniada littorea	1	1	ECHINODERMATA		
Gyptis vittata	3	1	Leptostyphula sp.		
Haploscoloplos foliosus	113	170	Metalia quinquesperforata	2	2
Lumbrineris cruentis	38	113	Unid. Ophiuroid		1
Malacoctenus indicus	1	1	HEMICORDATA		
Mesochaetopterus sagittarius	3	13	Unid. Enteropneust	1	
Nephlys picta	1	1	CEPHALOCHORDATA		
Onuphis e. ocellata	4	1	Branchiostoma floridae	2	32
Paranutes speciosus	2	1	Lepidostomium gracile		1
Paronides tigris	2	1	Synphurus sp.		1
Paronis fulgens	2	2	VERTEBRATA		
Parapriopriopis pinnata	2	6	Lepidichthys sp.		
Phyllocladus arenae	2	2	TOTAL SPECIES/INDIVIDUALS	20/81	38/24
					60/534

average of 2,200, with a range between 324 (immediately after dredging), and 4,037 1 year following dredging.

Results of periodic sampling at station 1 showed that numbers of individuals within the borrow pit first reached control sample abundance in December 1976, or about 3 months after dredging had been completed. From that time through the next four sampling periods, individuals in experimental samples were more numerous than in control samples. In May, abundance values were reversed, then again favored the experimental sample in June but remained higher in controls until collecting terminated in November 1977. Thus, a pattern of abundance indicative of faunal recovery within 3 months did not occur the following summer and fall seasons.

At stations 1 to 6, one-time sampling in July neither confirmed nor refuted evidence of recovery from time-sequence sampling at station 1. Numbers of individuals were higher in control samples at stations 1, 3, and 4, while abundance values were higher in experimental samples at stations 2, 5, and 6. A comparison of averages and ranges showed that the average number of individuals per square meter was higher for experimental samples. The low for experimental collections was well above that of control samples, and the high for experimental samples was comparable to the high for control samples. In summary, abundance values demonstrated rapid initial faunal recovery in the borrow pits that was practically complete after about 12 months.

c. Diversity (H') and Equitability (J'). For comparable pairs of control and experimental samples, species richness and abundance data were converted statistically to provide an index of diversity (H') that was used to numerically determine degrees of difference between faunal communities in undredged bottom and borrow pits. Observed differences were validated for each sample set by calculating equitability (J'), which is a mathematical measurement of how evenly organisms in a sample are divided among the various species represented (Pielou, 1975). Used in combination, values of H' and J' for base-line and control samples were regarded normal. For experimental samples, lesser values of H' and J' were attributed to dredging effects, and equal or higher values were considered evidence of faunal recovery. In base-line samples, values for both parameters were slightly higher in summer months, but control samples at station 1 showed no seasonal trend.

Average values for H' and J' in base-line samples were 2.6 and 0.7 respectively, with H' ranging from 1.9 to 3.5 and J' ranging from 0.6 to 0.8. Average H' in control samples was a little higher than base-line but J' was the same and ranges of both were within base-line limits. Among experimental collections, average H' was 2.8 and ranged between 1.8 and 3.7. The average for J' was the same as for base-line and control samples, but the low was 0.5 and the high was 0.8. Lowest values for H' and J' were recorded in January and February, and may have been a result of low water temperature as well as dredging.

When H' and J' values for control and experimental samples taken on the same data were compared, the results showed little regularity. In the series from

station 1, the first experimental sample to equal or surpass control values of H' and J' was collected in October, about 2 months after dredging. From that time until November of the next year, only 5 of 14 experimental samples showed evidence of faunal recovery. Recovery was demonstrated somewhat better by H' and J' data from the six stations sampled in July 1977. At four borrow pit stations, experimental samples had the same or higher diversity and equitability values than control samples. Also, average H' for experimental samples was higher than that for control samples, and averages of J' were the same inside and outside borrow pits.

A review of diversity and equitability results suggests the following: (1) the benthos off Panama City Beach exhibited an annual cycle in which species diversity and abundance were greater in warm water months than in winter; (2) faunal recovery in the borrow pit at station 1 was evident to a considerable degree within 2 to 3 months after dredging, and became nearly complete by the end of sampling in November 1977; and (3) faunal recovery also occurred within 1 year of dredging in at least half of the six borrow pits sampled. To further test these inferences, sets of biotic data from control and experimental samples were evaluated using Morisita's index of faunal similarity and stability analyses. Morisita's index was first used to develop similarity matrices (App. D), and then to perform a classification analysis that arranged control and experimental samples in the form of a dendrogram according to their various degrees of likeness (App. E). Two stability analyses were made (App. F). The first shows the amount of sample variation among the control and experimental samples when compared to the centroid of the statistical faunal cluster calculated from all base-line and control data. The second shows time to faunal recovery by plotting experimental sample data against the nearest mathematical edge of the same statistical cluster.

d. Morisita's Index. Similarity matrices were calculated and displayed for time-sequence samples from station 1, and for one-time collections at stations 1 to 6 (App. D). A regular pattern of light cells (no similarity) and dark cells (high similarity) was not evident because 45 percent or more of station-to-station comparisons in both values had faunal overlap of at least 50 percent. For additional clarification, the same data were used to generate a classification analysis for presentation as a cluster diagram (App. E). In performing the necessary calculations, a Q-mode (normal) analysis was made to show faunal relationships on a station-to-station basis; no data transformations were made because doing so would obscure the dominant ranking of any faunal elements in the samples; and group averaging was selected as the sorting strategy.

For time-sequence samples, the first five (1 September 1977-experimental to 10 August 1976-experimental) show very little similarity to any other samples and were therefore considered unrelated, or outliers. These outliers include two summer-fall experimental samples taken 1 year after dredging, two similar winter collections taken about 6 months after dredging, and the first experimental sample taken a few days after the dredging. The interpretation here is that the two experimental samples 1 year after dredging are as unrelated to other samples

as the one taken immediately after dredging and the two taken in winter during the presumed period of least faunal diversity and abundance.

The next group is the first cluster and has five samples (1 April 1977-experimental to 2 May 1977-experimental). These are related by season (spring), and consist of a base-line sample and control and experimental samples collected 8 to 9 months after dredging. This mixture, and close correspondence between control and experimental samples suggests that community recovery has occurred within the borrow pit at station 1.

Then there is a single, odd sample with no close associates (1 November 1977-experimental), followed by the second cluster which contains eight samples (4 October 1976-experimental to 3 October 1977-experimental). Except for the two control samples, this group represents the experimental samples in the fall during the first 3 months after dredging.

Cluster three is considered the opposite of cluster two. It has seven samples (10 August 1976-control to 2 August 1977-control); five are post-dredging late summer and fall control samples; one a preconstruction control sample from July; and one a winter experimental sample.

Cluster four is the largest grouping and contains the next 15 samples (1 September 1977-control to 1 November 1977-control); 8 of these are fall control samples and closely associated with experimental samples taken as soon as 2 weeks after dredging, as well as in various other months. Here, the indication is that recovery at station 1 began very quickly after dredging.

The fifth and last cluster contains six samples (1 June 1977-control to 11 July 1977-experimental), which are equally divided among summer control and experimental samples taken about 1 year after dredging. Similarities between clusters one and five provide substantial evidence of faunal recovery over a postconstruction period of 8 to 11 months.

For the one-time sampling at six stations, control and experimental collections all show a high level of faunal affinity and therefore support cluster data from station 1 showing a recovery time of 1 year or less. At the time these samples were taken, the diagram shows that station location east to west along the coast was a greater clustering factor than whether or not a sample came from a dredged or undredged bottom. This is not surprising considering the daily discharge of estuarine water through West Pass and into nearshore waters at the eastern end of the study area.

e. Stability Analyses. In the first analysis, control and experimental samples are represented along the x-axis according to the number of days before and after dredging (see App. F). The y-axis is a scale of increasing distance from a statistically determined centroid, or midpoint within a community cluster represented mathematically and calculated from all available base-line and

control data. This graph shows a large variation occurring in control and experimental samples, and at corresponding times, both appear about equally distant from the centroid--distance to maximum community stability. In other words, control samples did not show close connections to the centroid, nor did they follow a seasonal or any other discernible pattern in relation to that point. Likewise, experimental samples showed no definite postconstruction deviation from the centroid, and followed no subsequent trend that might have indicated recovery. In fact, when respective sample distances from the centroid were compared in a Mann-Whitney U-Test, it was found that variations among control and experimental samples were statistically indistinguishable. The point emphasized by this analysis is that faunal variation was a major feature of both control and experimental samples.

In the second graph, the y-axis scale (labeled distance to cluster edge) refers to the edge of the statistical community (to a 95-percent confidence level) that has the centroid as its midpoint (App. F). The zero point on the scale represents the nearest edge of the community, higher positive values are increasing distances from the edge, and negative values show that the experimental sample falls inside the cluster about the centroid and cannot be statistically separated from it. Experimental samples along the x-axis are arranged by day number in postdredging sequence. The x-y plots show that an experimental sample first touched the edge of the centroid cluster on day 332 (5 July 1977), about 11 months after dredging was completed at station 1. This intersection of an experimental sample with the zero line represents time to faunal recovery. However, in several later samples, the plot again falls outside the cluster edge, and does not return until October, 14 months after dredging and 1 month before sampling ended. This situation may be due to normal sample variation.

VI. CONCLUSIONS AND DISCUSSION

Study results indicate several general conclusions related to hydrology, sediments, and benthic fauna of borrow pits and undredged adjacent bottom. Hydrological measurements included temperature and salinity, recorded quarterly at stations A and B in 1974 and 1975, and monthly at station 1 during a 20-month period between April 1976 and November 1977. Temperature data showed that regular seasonal changes are subject to rather wide year-to-year variations. Summer temperature was the most consistent, but in spring, fall, and winter, observed yearly differences were on the order of 10° Celsius. In part, fluctuations of this magnitude could conceivably mediate events responsible for changes in benthic diversity and abundance recorded in base-line, control, and experimental samples.

Salinity was characteristically high (above 32 parts per thousand); however, a low value of 26 parts per thousand, recorded in August 1975, showed that the study area may at times be influenced by estuarine water masses from St. Andrew Bay and perhaps other areas as well (Salsman and Ciesluk, 1978). As with temperature, such periodic change could be translated into adjustments in community structure. In the case of salinity, however, the effects might be

more than physiological, as foreign water masses would undoubtedly introduce a variety of immigrant organisms and potential community recruits.

A comparison of sediments from undredged bottom and borrow pits showed that most deviations from normal properties appeared in experimental samples. Major sedimentological differences could be identified due to accumulation of loosely packed, darker, and siltier sediments in the pits shortly after dredging. These distinctions became more subtle with time, and by the following year, the surface samples (in nearly filled pits) were very similar to sediments on the adjacent undisturbed sea floor. When compared to base-line samples, specific differences included the following: (1) lower sand content, (2) higher silt-clay content, (3) poorer sorting, (4) more finely skewed, (5) more variation in both directions from a leptokurtic condition, and (6) higher content of organic carbon.

In the borrow pit at station 1, altered sediment texture was confirmed by divers, and bathymetric changes were recorded over time. Depth of the cut was 3 to 5 meters below the sea floor, and sediment at the bottom initially appeared dark, soft, and silty. Within a few months this material was covered by fine sand. By the end of sampling in November 1977, the pit had filled to within a meter of the surrounding bottom. A final visual impression was that sediments were still finer and darker, but no distinction could be made between epibenthic and pelagic marine life inside and outside the borrow pit.

Dredging caused an immediate decline in the bottom community followed by a rapid postconstruction recovery that was virtually complete after 1 year. This, or even a shorter recovery period of 8 to 9 months, was supported by analyses that included: (1) species richness, (2) abundance of individuals, (3) diversity and equitability indexes, (4) Morisita's index of faunal similarity, and (5) stability analyses. It is important to again note that sampling beyond 1 year indicated lack of complete faunal recovery. This may be true, or these samples may merely be representative of large natural environmental variations that were shown to be an inherent characteristic of the shallow coastal system off Panama City Beach.

On the basis of data presented here, and complementary studies by Saloman (1976) and Culter and Mahadevan (1982), it is evident that dredging done at Panama City Beach has had no adverse long-term effect on bottom dwelling invertebrates, sediments, or water quality either along the shore or in offshore borrow areas. Short-term ecological consequences of dredging were shown to last only about 1 year, and included only minor sedimentological changes and only a small decline in diversity and abundance among bottom dwelling invertebrates. This lack of evident protracted environmental alteration is due to factors related to physical and biological oceanography within the dredging and disposal areas, and to certain engineering features of the beach restoration project. The natural factors would include the following regional characteristics: (1) moderate to high wave energy capable of eroding and transporting large volumes of sediment annually, (2) tidal, longshore, offshore, and storm generated currents that have

the same, or greater, capability of transporting nearshore sediments, (3) a geographic location that is regularly influenced by water masses and marine life of estuarine, coastal, and oceanic origins, (4) a native infauna that is diversified, abundant, and well adapted to substrate disruption and movement, and (5) a fauna that is composed of subtropical and temperate species whose active reproductive periods are limited by low water temperatures normally recorded in only 1 or 2 winter months.

As for features of the dredging project, numerous small borrow areas were used, instead of fewer larger ones, and they were dredged only to a depth of about 5 meters or less. At this level, no strata of silt, clay, or rock were uncovered so that sediment type in dredged areas remained very much like sediment in undredged areas. Also, dredging occurred in fairly shallow water where sediment transport supplied the volume of sand required to rapidly fill the borrow pits. In this connection, it is important to mention that because of their fast filling rate, and the normally low concentration of suspended solids in overlying water, no biologically detrimental quantities of silt and clay size particles accumulated in borrow areas off Panama City Beach. If anything, during the recovery period, data support the theory that within borrow pits a relative decrease in turbulence and a slight increase in organic deposits may have been responsible for figures showing a higher diversity and abundance of infauna in some dredged areas compared to figures for bottom left undisturbed.

In general, results of coastal restoration studies at Panama City Beach agree with findings for similar projects in comparable surroundings (Thompson, 1973), and along with more recent work (Turberville and Marsh, 1982), provide additional information that can be used both locally and elsewhere to more accurately predict and evaluate environmental effects of beach nourishment operations. Nevertheless, since each coastal and estuarine area has certain unique features, it is important to continue a close association between ecological research and coastal engineering. Ideally, the research should be conducted to collect base-line data, proceed during all phases of construction, and continue after project completion for a sufficient period of time to obtain short-term (1 year) and long-term data (2 years or longer). In all instances major research emphasis should at least include: (1) factors related to geographic and meteorological conditions, (2) sedimentology, (3) water quality, (4) hydrodynamics, (5) resident and migratory biota at the bottom and throughout the water column, (6) interactions between biotic and abiotic elements, and (7) socioeconomic circumstances. By using such a research-oriented approach in future engineering projects, many important coastal resources could be protected, or even enhanced, and most environmental problem areas would be identified and avoided.

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APPENDIX A

HYDROLOGICAL AND SEDIMENT DATA BY STATION

Hydrological and sedimentological data, by station and date, for offshore stations (9-meter depth) before and after dredging--beach restoration project, Panama City Beach, Florida (November 1974 to November 1977).

HYDROLOGICAL AND SEDIMENTOLOGICAL DATA, BY STATION AND DATE, FOR OFFSHORE STATIONS (30-FOOT DEPTH) BEFORE AND AFTER DREDGING - BEACH RESTORATION PROJECT, PANAMA CITY BEACH, FLORIDA (NOVEMBER 1974 TO NOVEMBER 1977).

STATION A - CONTROL

PARAMETER	DATE				MEAN	RANGE
	11/74	2/75	5/75	8/75		
<u>HYDROLOGICAL</u>						
SALINITY, 00/0	34.500	34.390	32.220	26.220	31.832	26.22 TO 34.50
WATER TEMP., C	21.000	17.400	26.200	28.300	23.225	17.40 TO 28.30
<u>SEDIMENT</u>						
GRANULE, WT.%						
SAND	99.861	99.892	99.826		99.860	99.83 TO 99.89
SILT	0.139	0.108	0.174		0.140	0.11 TO 0.17
CLAY						
MEAN GRAIN SIZE, ϑ	2.203	2.294	2.433		2.310	2.20 TO 2.43
ST. DEVIATION, δ	0.715	0.595	0.499		0.603	0.50 TO 0.71
SKEWNESS	-0.156	-0.246	-0.199		-0.25	-0.16 TO -0.16
KURTOSIS	1.014	1.145	1.227		1.129	1.01 TO 1.23
T. CARBON, WT.%	0.113	0.144	0.080	0.070	0.102	0.07 TO 0.14
T. ORGANIC C	0.081	0.024	0.047	0.050	0.050	0.02 TO 0.08
T. CARBONATE C	0.032	0.120	0.033	0.020	0.051	0.02 TO 0.12

STATION B - CONTROL

PARAMETER	DATE				MEAN	RANGE
	11/74	2/75	5/75	8/75		
<u>HYDROLOGICAL</u>						
SALINITY, 00/0	34.330	33.890	32.170	26.110	31.625	26.11 TO 34.33
WATER TEMP., C	20.800	17.500	25.000	28.500	23.200	17.50 TO 28.50
<u>SEDIMENT</u>						
GRANULE, WT.%						
SAND	99.871	99.341	100.000	99.886	99.774	99.34 TO 100.00
SILT	0.129	0.157		0.114	0.133	0.11 TO 0.16
CLAY						
MEAN GRAIN SIZE, ϑ	2.213	2.169	2.330	2.447	2.290	2.17 TO 2.45
ST. DEVIATION, δ	0.802	0.744	0.562	0.554	0.665	0.55 TO 0.80
SKEWNESS	-0.236	-0.382	-0.234	-0.099	-0.38	-0.09 TO -0.09
KURTOSIS	1.262	1.177	1.134	1.376	1.237	1.13 TO 1.38
T. CARBON, WT.%	0.106	0.334	0.382		0.174	0.08 TO 0.33
T. ORGANIC C	0.084	0.114	0.008		0.069	0.01 TO 0.11
T. CARBONATE C	0.022	0.220	0.074		0.105	0.02 TO 0.22

TREASURE ISLAND MOTEL (STATION 1) - CONTROL

PARAMETER	DATE				MEAN	RANGE
	4/76	5/76	7/76			
<u>HYDROLOGICAL</u>						
SALINITY, 00/0	33.330	32.330	33.280		32.980	32.33 TO 33.33
WATER TEMP., C	20.200	25.700	23.000		24.633	20.20 TO 28.00
<u>SEDIMENT</u>						
GRANULE, WT.%						
SAND	99.836				99.836	99.84 TO 99.84
SILT	0.008				0.008	0.01 TO 0.01
CLAY						
MEAN GRAIN SIZE, ϑ	2.407				2.407	2.41 TO 2.41
ST. DEVIATION, δ	0.470				0.470	0.47 TO 0.47
SKEWNESS	0.020				0.020	0.02 TO 0.02
KURTOSIS	1.228				1.228	1.23 TO 1.23
T. CARBON, WT.%	0.269				0.269	0.27 TO 0.27
T. ORGANIC C	0.032				0.032	0.03 TO 0.03
T. CARBONATE C	0.237				0.237	0.24 TO 0.24

TREASURE ISLAND MOTEL (STATION 1) - CONTROL & EXPERIMENTAL

PARAMETERS	DATE - CONTROL	DATE - EXPERIMENTAL
<u>HYDROLOGICAL</u>		
SALINITY, 00/0	35.280	35.280
WATER TEMP., C	27.000	27.000
<u>SEDIMENT</u>		
GRANULE, WT.%		
SAND		99.856
SILT		0.144
CLAY		
MEAN GRAIN SIZE, Ø		2.481
ST. DEVIATION, Ø		0.411
SKEWNESS		-0.137
KURTOSIS		1.017
T. CARBON, WT.%		0.347
T. ORGANIC C		0.336
T. CARBONATE C		0.011

TREASURE ISLAND MOTEL (STATION 1) - CONTROL & EXPERIMENTAL

PARAMETERS	DATE - CONTROL	DATE - EXPERIMENTAL
<u>HYDROLOGICAL</u>		
SALINITY, 00/0	35.280	35.280
WATER TEMP., C	27.000	27.000
<u>SEDIMENT</u>		
GRANULE, WT.%		
SAND		0.271
SILT		99.418
CLAY		0.311
MEAN GRAIN SIZE, Ø		2.493
ST. DEVIATION, Ø		0.530
SKEWNESS		-0.067
KURTOSIS		1.436
T. CARBON, WT.%		0.308
T. ORGANIC C		0.300
T. CARBONATE C		0.008

TREASURE ISLAND MOTEL (STATION 1) - CONTROL & EXPERIMENTAL

PARAMETERS	DATE - CONTROL	DATE - EXPERIMENTAL
<u>HYDROLOGICAL</u>		
SALINITY, 00/0	35.280	35.280
WATER TEMP., C	27.000	27.000
<u>SEDIMENT</u>		
GRANULE, WT.%		
SAND		0.063
SILT		99.634
CLAY		0.303
MEAN GRAIN SIZE, Ø		2.501
ST. DEVIATION, Ø		0.458
SKEWNESS		0.024
KURTOSIS		1.209
T. CARBON, WT.%		0.361
T. ORGANIC C		0.177
T. CARBONATE C		0.184

TREASURE ISLAND MOTEL (STATION 1) - CONTROL & EXPERIMENTAL		
PARAMETERS	DATE - CONTROL	DATE - EXPERIMENTAL
HYDROLOGICAL		
SALINITY, 00/0	32.610	32.610
WATER TEMP., C	27.800	27.800
SEDIMENT		
GRANULE, WT.%	0.187	
SAND	99.672	97.108
SILT	0.141	2.892
CLAY		
MEAN GRAIN SIZE, Ø	2.323	2.747
ST. DEVIATION, Ø	0.558	0.587
SKEWNESS	-0.281	0.285
KURTOSIS	1.189	1.115
T. CARBON, WT.%	0.348	1.123
T. ORGANIC C	0.100	0.039
T. CARBONATE C	0.248	1.084

TREASURE ISLAND MOTEL (STATION 1) - CONTROL & EXPERIMENTAL		
PARAMETERS	DATE - CONTROL	DATE - EXPERIMENTAL
HYDROLOGICAL		
SALINITY, 00/0	32.610	32.610
WATER TEMP., C	27.800	27.800
SEDIMENT		
GRANULE, WT.%		99.776
SAND		0.224
SILT		
CLAY		
MEAN GRAIN SIZE, Ø	2.508	
ST. DEVIATION, Ø	0.507	
SKEWNESS	-0.015	
KURTOSIS	1.348	
T. CARBON, WT.%		0.302
T. ORGANIC C		0.257
T. CARBONATE C		0.045

TREASURE ISLAND MOTEL (STATION 1) - CONTROL & EXPERIMENTAL		
PARAMETERS	DATE - CONTROL	DATE - EXPERIMENTAL
HYDROLOGICAL		
SALINITY, 00/0	32.610	32.610
WATER TEMP., C	27.800	27.800
SEDIMENT		
GRANULE, WT.%		91.896
SAND		8.104
SILT		
CLAY		
MEAN GRAIN SIZE, Ø	2.835	
ST. DEVIATION, Ø	0.736	
SKEWNESS	0.340	
KURTOSIS	1.070	
T. CARBON, WT.%		2.318
T. ORGANIC C		0.462
T. CARBONATE C		1.856

TREASURE ISLAND MOTEL (STATION 1) - CONTROL & EXPERIMENTAL

PARAMETERS	DATE - CONTROL 10/4/76	DATE - EXPERIMENTAL 10/4/76
<u>HYDROLOGICAL</u>		
SALINITY, 00/0	33.060	33.060
WATER TEMP., C	24.900	24.900
<u>SEDIMENT</u>		
GRANULE, WT.%		0.092
SAND		99.826
SILT		0.283
CLAY		
MEAN GRAIN SIZE, Ø		2.452
ST. DEVIATION, Ø		0.481
SKENNESS		-0.165
KURTOSIS		1.202
T. CARBON, WT.%		0.281
T. ORGANIC C		0.187
T. CARBONATE C		0.094

TREASURE ISLAND MOTEL (STATION 1) - CONTROL & EXPERIMENTAL

PARAMETERS	DATE - CONTROL 10/18/76	DATE - EXPERIMENTAL 10/18/76
<u>HYDROLOGICAL</u>		
SALINITY, 00/0	33.060	33.060
WATER TEMP., C	24.900	24.900
<u>SEDIMENT</u>		
GRANULE, WT.%		98.611
SAND		1.389
SILT		
CLAY		
MEAN GRAIN SIZE, Ø		2.536
ST. DEVIATION, Ø		0.411
SKENNESS		0.055
KURTOSIS		1.068
T. CARBON, WT.%		0.722
T. ORGANIC C		0.700
T. CARBONATE C		0.072

TREASURE ISLAND MOTEL (STATION 1) - CONTROL & EXPERIMENTAL

PARAMETERS	DATE - CONTROL 11/1/76	DATE - EXPERIMENTAL 11/1/76
<u>HYDROLOGICAL</u>		
SALINITY, 00/0	33.170	33.170
WATER TEMP., C	18.000	18.000
<u>SEDIMENT</u>		
GRANULE, WT.%		0.108
SAND		98.769
SILT		1.123
CLAY		
MEAN GRAIN SIZE, Ø		2.507
ST. DEVIATION, Ø		0.536
SKENNESS		-0.042
KURTOSIS		1.492
T. CARBON, WT.%		0.519
T. ORGANIC C		0.316
T. CARBONATE C		0.203

TREASURE ISLAND MOTEL (STATION 1) - CONTROL & EXPERIMENTAL

PARAMETERS	DATE - CONTROL	DATE - EXPERIMENTAL
<u>HYDROLOGICAL</u>		
SALINITY, 00/0	34.060	34.060
WATER TEMP., C	12.500	12.500
<u>SEDIMENT</u>		
GRANULE, WT.%		
SAND	99.876	99.086
SILT	0.124	0.862
CLAY		
MEAN GRAIN SIZE, Ø	2.300	2.524
ST. DEVIATION, Ø	0.577	0.471
SKEWNESS	-0.267	0.074
KURTOSIS	1.118	1.225
T. CARBON, WT.%	0.275	0.498
T. ORGANIC C	0.060	0.110
T. CARBONATE C	0.215	0.388

TREASURE ISLAND MOTEL (STATION 1) - CONTROL & EXPERIMENTAL

PARAMETERS	DATE - CONTROL	DATE - EXPERIMENTAL
<u>HYDROLOGICAL</u>		
SALINITY, 00/0	33.280	33.280
WATER TEMP., C	12.400	12.400
<u>SEDIMENT</u>		
GRANULE, WT.%		
SAND	97.222	0.437
SILT	2.341	97.222
CLAY		
MEAN GRAIN SIZE, Ø		2.518
ST. DEVIATION, Ø		0.597
SKEWNESS		-0.037
KURTOSIS		1.684
T. CARBON, WT.%		0.919
T. ORGANIC C		0.327
T. CARBONATE C		0.592

TREASURE ISLAND MOTEL (STATION 1) - CONTROL & EXPERIMENTAL

PARAMETERS	DATE - CONTROL	DATE - EXPERIMENTAL
<u>HYDROLOGICAL</u>		
SALINITY, 00/0	34.330	34.330
WATER TEMP., C	9.000	9.000
<u>SEDIMENT</u>		
GRANULE, WT.%		
SAND	99.701	0.085
SILT	0.215	99.701
CLAY		
MEAN GRAIN SIZE, Ø		2.499
ST. DEVIATION, Ø		0.486
SKEWNESS		-0.036
KURTOSIS		1.295
T. CARBON, WT.%		0.313
T. ORGANIC C		0.296
T. CARBONATE C		0.017

TREASURE ISLAND MOTEL (STATION 1) - CONTROL & EXPERIMENTAL

PARAMETERS	DATE - CONTROL	DATE - EXPERIMENTAL
<u>HYDROLOGICAL</u>		
SALINITY, 00/0	34.440	34.440
WATER TEMP., C	14.300	14.300
<u>SEDIMENT</u>		
GRANULE, WT.%		0.652
SAND		99.265
SILT		0.084
CLAY		
MEAN GRAIN SIZE, G		2.316
ST. DEVIATION, G		0.571
SKEWNESS		-0.237
KURTOSIS		1.228
T. CARBON, WT.%		0.253
T. ORGANIC C		0.163
T. CARBONATE C		0.090

TREASURE ISLAND MOTEL (STATION 1) - CONTROL & EXPERIMENTAL

PARAMETERS	DATE - CONTROL	DATE - EXPERIMENTAL
<u>HYDROLOGICAL</u>		
SALINITY, 00/0	33.500	33.500
WATER TEMP., C	22.400	22.400
<u>SEDIMENT</u>		
GRANULE, WT.%		0.201
SAND		99.214
SILT		0.585
CLAY		
MEAN GRAIN SIZE, G	2.303	2.487
ST. DEVIATION, G	0.560	0.414
SKEWNESS	-0.275	-0.103
KURTOSIS	1.140	1.031
T. CARBON, WT.%	0.214	0.339
T. ORGANIC C	0.202	0.328
T. CARBONATE C	0.012	0.011

TREASURE ISLAND MOTEL (STATION 1) - CONTROL & EXPERIMENTAL

PARAMETERS	DATE - CONTROL	DATE - EXPERIMENTAL
<u>HYDROLOGICAL</u>		
SALINITY, 00/0	34.800	34.280
WATER TEMP., C	21.800	21.800
<u>SEDIMENT</u>		
GRANULE, WT.%		0.016
SAND		99.801
SILT		0.183
CLAY		
MEAN GRAIN SIZE, G		2.491
ST. DEVIATION, G		10.389
SKEWNESS		-0.100
KURTOSIS		0.937
T. CARBON, WT.%		0.244
T. ORGANIC C		0.097
T. CARBONATE C		0.147

TREASURE ISLAND MOTEL (STATION 1) - CONTROL & EXPERIMENTAL		
PARAMETERS	DATE - CONTROL	DATE - EXPERIMENTAL
<u>HYDROLOGICAL</u>		
SALINITY, 00/0	32.060	32.060
WATER TEMP., C	25.700	25.700
<u>SEDIMENT</u>		
GRANULE, WT.%		0.085
SAND		97.964
SILT		1.051
CLAY		
MEAN GRAIN SIZE, Ø		2.356
ST. DEVIATION, Ø		0.677
SKEWNESS		-0.193
KURTOSIS		1.572
T. CARBON, WT.%		1.206
T. ORGANIC C		0.206
T. CARBONATE C		1.000

TREASURE ISLAND MOTEL (STATION 1) - CONTROL & EXPERIMENTAL		
PARAMETERS	DATE - CONTROL	DATE - EXPERIMENTAL
<u>HYDROLOGICAL</u>		
SALINITY, 00/0	33.560	33.560
WATER TEMP., C	27.500	27.500
<u>SEDIMENT</u>		
GRANULE, WT.%	0.335	
SAND	99.422	98.705
SILT	0.244	1.295
CLAY		
MEAN GRAIN SIZE, Ø	2.456	2.507
ST. DEVIATION, Ø	0.453	0.483
SKEWNESS	-0.193	0.034
KURTOSIS	1.195	1.274
T. CARBON, WT.%		
T. ORGANIC C		
T. CARBONATE C		

TREASURE ISLAND MOTEL (STATION 1) - CONTROL & EXPERIMENTAL		
PARAMETERS	DATE - CONTROL	DATE - EXPERIMENTAL
<u>HYDROLOGICAL</u>		
SALINITY, 00/0	35.330	35.330
WATER TEMP., C	29.000	29.000
<u>SEDIMENT</u>		
GRANULE, WT.%		97.489
SAND		2.511
SILT		
CLAY		
MEAN GRAIN SIZE, Ø		2.529
ST. DEVIATION, Ø		0.463
SKEWNESS		0.161
KURTOSIS		1.201
T. CARBON, WT.%		
T. ORGANIC C		
T. CARBONATE C		

TREASURE ISLAND MOTEL (STATION 1) - CONTROL & EXPERIMENTAL

PARAMETERS	DATE - CONTROL 9/1/77	DATE - EXPERIMENTAL 9/1/77
HYDROLOGICAL		
SALINITY, 00/0	32.610	32.610
WATER TEMP., C	27.700	27.700
SEDIMENT		
GRANULE, WT.%		
SAND		96.923
SILT		3.077
CLAY		
MEAN GRAIN SIZE, #		2.544
ST. DEVIATION, #		0.465
SKEWNESS		0.197
KURTOSIS		1.219
T. CARBON, WT.%		
T. ORGANIC C		
T. CARBONATE C		

TREASURE ISLAND MOTEL (STATION 1) - CONTROL & EXPERIMENTAL

PARAMETERS	DATE - CONTROL 10/3/77	DATE - EXPERIMENTAL 10/3/77
HYDROLOGICAL		
SALINITY, 00/0	33.060	33.060
WATER TEMP., C	25.000	25.000
SEDIMENT		
GRANULE, WT.%		0.092
SAND		99.597
SILT		0.311
CLAY		
MEAN GRAIN SIZE, #		2.491
ST. DEVIATION, #		0.505
SKEWNESS		-0.037
KURTOSIS		1.327
T. CARBON, WT.%		
T. ORGANIC C		
T. CARBONATE C		

TREASURE ISLAND MOTEL (STATION 1) - CONTROL & EXPERIMENTAL

PARAMETERS	DATE - CONTROL 11/1/77	DATE - EXPERIMENTAL 11/1/77
HYDROLOGICAL		
SALINITY, 00/0		
WATER TEMP., C		
SEDIMENT		
GRANULE, WT.%		0.101
SAND		99.163
SILT		0.736
CLAY		
MEAN GRAIN SIZE, #		2.551
ST. DEVIATION, #		0.516
SKEWNESS		0.075
KURTOSIS		1.282
T. CARBON, WT.%		
T. ORGANIC C		
T. CARBONATE C		

TREASURE ISLAND MOTEL (STATION 1) - CONTROL & EXPERIMENTAL

PARAMETERS	DATE - CONTROL	DATE - EXPERIMENTAL
HYDROLOGICAL		
SALINITY, 00/0	33.560	33.560
WATER TEMP., C	27.500	27.500
SEDIMENT		
GRANULE, WT.%		
SAND	99.700	98.641
SILT	0.300	1.359
CLAY		
MEAN GRAIN SIZE, Ø	2.445	2.499
ST. DEVIATION, Ø	0.445	0.525
SKEWNESS	-0.197	-0.001
KURTOSIS	1.178	1.388
T. CARBON, WT.%		
T. ORGANIC C		
T. CARBONATE C		

SUN & SWIM MOTEL (STATION 2) - CONTROL & EXPERIMENTAL

PARAMETERS	DATE - CONTROL	DATE - EXPERIMENTAL
HYDROLOGICAL		
SALINITY, 00/0	33.560	33.560
WATER TEMP., C	27.500	27.500
SEDIMENT		
GRANULE, WT.%		
SAND	99.646	99.796
SILT	0.354	0.204
CLAY		
MEAN GRAIN SIZE, Ø	2.452	2.425
ST. DEVIATION, Ø	0.440	0.479
SKEWNESS	-0.179	-0.194
KURTOSIS	1.148	1.205
T. CARBON, WT.%		
T. ORGANIC C		
T. CARBONATE C		

HILTON HOLIDAY INN (STATION 3) - CONTROL & EXPERIMENTAL

PARAMETERS	DATE - CONTROL	DATE - EXPERIMENTAL
HYDROLOGICAL		
SALINITY, 00/0	33.330	33.330
WATER TEMP., C	26.800	26.800
SEDIMENT		
GRANULE, WT.%		
SAND	99.879	98.964
SILT	0.121	0.114
CLAY		
MEAN GRAIN SIZE, Ø	2.214	1.749
ST. DEVIATION, Ø	0.615	1.064
SKEWNESS	-0.319	-0.460
KURTOSIS	1.109	0.824
T. CARBON, WT.%		
T. ORGANIC C		
T. CARBONATE C		

SANDPIPER MOTEL (STATION 4) - CONTROL & EXPERIMENTAL

PARAMETERS	DATE - CONTROL	DATE - EXPERIMENTAL
<u>HYDROLOGICAL</u>		
SALINITY, 00/0	33.330	33.330
WATER TEMP., C	26.800	26.800
<u>SEDIMENT</u>		
GRANULE, WT.%		
SAND	99.859	99.810
SILT	0.141	0.111
CLAY		
MEAN GRAIN SIZE, σ	2.244	2.008
ST. DEVIATION, σ	0.608	0.831
SKEWNESS	-0.307	-0.414
KURTOSIS	1.158	0.954
T. CARBON, WT.%		
T. ORGANIC C		
T. CARBONATE C		

PEPPERTREE CONDOMINIUM (STATION 5) - CONTROL & EXPERIMENTAL

PARAMETERS	DATE - CONTROL	DATE - EXPERIMENTAL
<u>HYDROLOGICAL</u>		
SALINITY, 00/0	33.330	33.330
WATER TEMP., C	26.800	26.800
<u>SEDIMENT</u>		
GRANULE, WT.%		
SAND	99.864	99.863
SILT	0.136	0.137
CLAY		
MEAN GRAIN SIZE, σ	2.305	2.257
ST. DEVIATION, σ	0.593	0.575
SKEWNESS	-0.331	-0.280
KURTOSIS	1.344	1.111
T. CARBON, WT.%		
T. ORGANIC C		
T. CARBONATE C		

BLUE DOLPHIN MOTEL (STATION 6) - CONTROL & EXPERIMENTAL

PARAMETERS	DATE - CONTROL	DATE - EXPERIMENTAL
<u>HYDROLOGICAL</u>		
SALINITY, 00/0	33.330	33.330
WATER TEMP., C	26.800	26.800
<u>SEDIMENT</u>		
GRANULE, WT.%		
SAND	99.520	99.757
SILT	0.139	0.106
CLAY		
MEAN GRAIN SIZE, σ	2.114	2.311
ST. DEVIATION, σ	0.760	0.612
SKEWNESS	-0.397	-0.340
KURTOSIS	1.092	1.391
T. CARBON, WT.%		
T. ORGANIC C		
T. CARBONATE C		

APPENDIX B

CHECKLIST OF ORGANISMS

Checklist of organisms collected at offshore stations (9-meter depth) before and after dredging--beach restoration project, Panama City Beach, Florida (November 1974 to November 1977).

CHECKLIST OF ORGANISMS COLLECTED AT OFFSHORE STATIONS (30-FOOT DEPTH)
BEFORE AND AFTER DREDGING - BEACH RESTORATION PROJECT, PANAMA CITY
BEACH, FLORIDA (NOVEMBER 1974 TO NOVEMBER 1977).

CNIDARIA
ACTINIARIA (SEA ANEMONES)
UNIDENTIFIED SP.

PLATYHELMINTHES
TURBELLARIA (FLATWORMS)
UNIDENTIFIED SP.

NEMERTINEA (RIBBON WORMS)
UNIDENTIFIED SP.

NEMATODA (ROUNDWORMS)
UNIDENTIFIED SP.

PHORONIDA (PHORONIDS)
PHORONIS ARCHITECTA

BRACHIOPODA (LAMP SHELLS)
GLOTTIDIA PYRAMIDATA

MOLLUSCA (SHELLFISH)
GASTROPODA (SNAILS)
ACTEOCINA CANALICULATA
ACTECCINA CANDEI
ACTECIN PUNCTOSTRIATUS
ANACHIS FLORICANA
BULLA STRIATA
CAECUM FLORIDANUM
CAECUM IMBRICATUM
CAECUM PULCHELLUM
CYLICHNELLA BIDENTATA
DIASTOMA VARIUM
MELANELLA JAMAICENSIS
NASSARIUS ACUTUS
NATICA PUSILLA
OLIVA SAYANA
OLIVELLA BULLULA
OLIVELLA MINUTA
OLIVELLA MUTICA
OLIVELLA PUSILLA
PHILINE SAGRA
POLINICES DUPLICATUS
TERERA CONCAVA
TEREBRA DISLOCATA
TURBONILLA CCRNADI
TURBONILLA ELEGANTULA
TURBONILLA SP.

PELUCYPODA (CLAMS)
ANADARA FLORIDANA
ANATINA ANATINA
CARDIOMYA COSTELLATA
CHICNE CANCELLATA
CHICNE GRUS
CUMINGIA TELLINOIDES
CUMINGIA T. VANHYNINGI
CUNA CALLI
DIPLOCONTA SEMIASPERA
DIPLOCONTA SP.
ERYVIA CONCENTRICA
LAEVICARDIUM LAEVIGATUM
LAEVICARDIUM MORTONI
LAEVICARDIUM PICTUM

LEPTON SP.
LUCINA MULTILINEATA
LUCINA RADIANA
LYCNSIA H. FLORIDANA
MACOMA CONSTRICTA
MACROCALLISTA MACULATA
MACROCALLISTA NIMBOSEA
MACTRA SP.
MUSCULUS LATERALIS
NUCULANA ACUTA
PANDRA TRILINEATA
PAPYRIDEA SOLENIIFORMIS
PARVILUCINA BLANDA
PERIPLCMIA MARGARITACEUM
PITAR SIMPSONI
SEMELE PROEICUA
SOLEMYA SP.
SOLEMYA VELUM
SOLEN VIRIDIS
STRIGILLA MIRABILIS
TELLIDORA CRISTATA
TELLINA A. TAYLORIANA
TELLINA AEQUISTRIATA
TELLINA IRIS
TELLINA TAMPAENSIS
TELLINA TEXANA
TELLINA VERSICOLOR
TRACHYCARDIUM MURICATUM
VARICORBULA OPERCULATA
VENERIDAE UNIDENTIFIED SP.

ANNELIDA (SEGMENTED WORMS)
CLIOCHETA
UNIDENTIFIED SP.

POLYCHAETA

AGLACPHAMUS VERRILLI
AMERICANUPHIS MAGNA
AMPHARETE ACUTIFRONS
ANAITIDES ERYTHROPHYLLOUS
ANTINE SP.
ADNIDES MAYAQUEZENSIS
APCPICNOSPPIO PYGMAEA
ARENICOLA CRISTATA
ARICIDEA CERRUTI
ARICIDEA FAUVELI
ARICIDEA FRAGILIS
ARICIDEA PHILIPINAE
ARICIDEA SUECICA
ARICIDEA TAYLORI
ARICIDEA WASSI
ARICIDEA SP.
ARMANDIA AGILIS
ARMANDIA MACULATA
ASYCHIS CAROLINAE
AXIOTELLA MUCOSA
BRANCHIOASYCHIS AMERICANA
BRANIA CLAVATA
BRANIA WELLFLEETENSIS
CABIRIA INCERTA
CAPITELLA CAPITATA
CAPITELLIDES JONESI
CAPITELLIDAE UNIDENTIFIED SP.
CARAZZIELLA SP.
CAULLERIELLA SP.
CERATCNEREIS IRRITABILIS
CERATCNEREIS MIRABILIS
CHAETOCZONE GAYHEADIA

CHAETOCENE SETOSA
 CHLOEIA VIRIDIS
 CHONE SP.
 CITRATULIDAE UNIDENTIFIED SP.
 CIRRAPHORUS LYRIFORMIS
 CISTERNIES GOULDII
 DASYERANCHUS LUMBRICOIDES
 DICOPTRA CUPREA
 DISPIC UNINCATA
 DORVILLEA SOCIAE
 DRIESCHIA PELLUCIDA
 ENCYPLORANCHUS SANGUINEUS
 ETEONE ALBA
 ETEONE LACTEA
 EULALIA SANGUINEA
 EUNICE ANTENNATA
 EURYTHOE COMPLANATA
 EXOGONE DISPAR
 FLABELLIGERA SP.
 GLYCERA AMERICANA
 GLYCERA DIBRANCHIATA
 GLYCERA OXYCEPHALA
 GLYCERA SP.
 GLYCINDE SOLITARIA
 GONIADA LITTOREA
 GRUBEULEPIS MEXICANA
 GYPTIS BREVIPALPA
 GYPTIS VITTATA
 HAPLOSCLOPLOS FOLIOSUS
 HAPLOSCLOPLOS FRAGILIS
 HAPLOSCLOPLOS ROBUSTUS
 HARMOTHOE IMBRICATA
 HARMOTHOE LUNULATA
 HEMIFEDUS ROSEUS
 HETEROMASTUS FILIFORMIS
 ISOLDA PULCHELLA
 LAECKEREIS CULVERI
 LOIMIA MEDUSA
 LOIMIA VIRIDIS
 LUMBRINERIS ACUTUS
 LUMBRINERIS CRUZENSIS
 LUMBRINERIS ERECTA
 LUMBRINERIS TENUIS
 LUMBRINERIS TETRAURA
 LYSIDICE NINETTA
 LYSILLA ALBA
 MACRCCLYMENE ZONALIS
 MAGELCNA LONGICORNIS
 MAGELCNA PETTIBONEAE
 MAGELCNA RIOJAI
 MAGELCNA SP.
 MALACCCERUS INDICUS
 MEDiomastus CALIFORNIENSIS
 MEGALOMMA BILOCULATUM
 MESOCRATOPTERUS SAGITTARIUS
 MICRCPHTHALMUS ABBERRANS
 MICRCPHTHALMUS SZCZELKOWII
 MICRCPHTHALMUS SP.
 MICRCSPIO PIGMENTATA
 MINUSPIO CIRRIFERA
 MYRICCHELE SP.
 NEANTHES ACUMINATA
 NEANTHES SP.
 NEANTHES SUCCINEA
 NEPHTYS BUCERA
 NEPHTYS PICTA
 NEFREIS LAMELLOSA
 NEFREIS PELAGICA
 NEFREIS SP.
 NOTOMASTUS HEMIPODUS
 NOTCMASTUS LATERICEUS
 ONUPHIS EPEMITA OCULATA
 ONUPHIS NEBULOSA
 ONUPHIS DALLICA
 OPHELIA SP.

ORHINIA RISERI
 OWENIA FUSIFORMIS
 BARANAIRES SPECIOSA
 PARACNIDES LYRA
 PARACNIDES SP.
 PARACNIS FULGENS
 PARACNIS SP.
 PARAPICNOSPIRO PINNATA
 PARAPICNOSYLLIS LONGICIRRATA
 PHERUS EHLERSI
 PHYLLODOCE ARENAE
 PHYLLODOCE SP.
 PHYLLOCRNATUS
 PISTA CRISTATA
 PISTA PALMATA
 PODARKE ORSCURA
 POECILOCHAEUS JOHNSONI
 POLYCIPRUS EXIMIUS
 POLYDORA SOCIALIS
 POLYDORA TETRABRANCHIA
 POLYODONTES LUPINA
 POLYNOIDAE UNIDENTIFIED SP.
 PRIONCSPIO CRISTATA
 PRICKCSPIO STEENSTRUPI
 PSEUDEURYTHOE AMBIGUA
 RULLIERINEREIS MEXICANA
 SABELLA MICROPHTHALIA
 SCOLELEPIS SQUAMATA
 SCOLELEPIS TEXANA
 SCLOLOPLCS ARMIGER
 SCLOLOPLCS RUBRA
 SIGALION ARENICOLA
 SIGAMBRA BASSI
 SIGAMBRA TENTACULATA
 SPAHEROSYLLIS SP.
 SPID PEITIBONEAE
 SPINTONIDAE UNIDENTIFIED SP.
 SPICHOCHAETOPTERUS OCULATUS
 SPICOPHANES BOBYX
 STHENELAIS BOA
 STREFTOSYLLIS ARENAE
 THARYX ANNULOSUS
 TRAVISIA HORSONAE
 WEBSTERINEREIS TRIDENTATA

SIPUNCULIDA (PEANUT WORMS)
 ASPIDOCSPHON SP.
 GOLFINGIA TRICHOCEPHALA
 SIPUNCULUS LONGIPAPILLOSUM
 UNIDENTIFIED SP.

ECHIURIDA (ECHIURIDS)
 UNIDENTIFIED SP.

ARTHROPODA (CRUSTACEANS)

AMPHIPODA
 ACANTHCHAUSTORIUS SP.
 AMPELISCA ABDITA
 AMPELISCA SP.
 AMPELISCA VADORUM
 AMPELISCA VERRILLI
 ARGISSA SP.
 CAPRELLIDAE UNIDENTIFIED SP.
 CARINICRATEA SP.
 COROPHUM SP.
 CYMADUSA SP.
 ELASMCSPUS SP.
 ERICHTHONIUS SP.
 GAMMAROPSPSIS SP.
 GITANOPSIS SP.
 HIPOCMEDON SP.
 HYPERFIA SP.

LEMBOS SP.
LEPIDACTYLUS SP.
LISTRIELLA SP.
LYSIANOPSIS SP.
MELITA APPENDICULATA
MICRDEUTOPUS SP.
MICRCROTOPUS SP.
MONOCULODES SP.
PARAPHOXUS SP.
PHOTIS SP.
PROTOHAUSTORIUS SP.
PSEUDOHAUSTORIUS SP.
PSEUDOPLATYISCHNOPUS SP.
SYNCHELIDIUM SP.
TIRON BIOSCELLATUS
TIRON SP.
UNIDENTIFIED SP.
ANOMURA
ALBUNEA PARETII
EUCERAMUS PRAEFLONGUS
LEPIDOPA WEBSTERI
PAGURUS LONGICARpus
PAGURUS SP.
PETRECHIUS DILEGENES
PETRELISTHES GALATHINUS
BRACHYURA
CALLINECTES SAPIDUS
CALLINECTES SP.
DISSEDACTYLUS MELLITAE
HEPATUS EPHELITICUS
LIBINIA CURIA
METOPORHAPIS CALCARATA
OSACHILA TUREROSA
OVALIPES OCCELLATUS
PANOPUS HERBSTII
PERSEPHCNA P. AQUILONARIS
PINNIXIA CHAETOPTERANA
PINNIXIA CYLINDRICA
PINNIXIA CRISTATA
PINNIXIA LEDTOSYNAPTAE
PINNIXIA LUNZI
PINNIXIA PEARSEI
PINNIXIA RETINENS
PINNIXIA SAYANA
PINNIXIA SP.
PINNOTHERES MACULATUS
PINNOTHERES OSTREUM
FINNOTHERES SP.
PORTUNUS GIBBESII
PORTUNUS SAYI
PORTUNUS SP.
PORTUNUS SPINIMANUS
PORTUNIDAE UNIDENTIFIED SP.
RANILIA MURICATA
CALLIANASSIDAE
CALLIANASSA JAMAICENSE
CARTDEA
ALPHEUS HETEROCHAELOS
AMBIDEXTER SYMMETRICUS
HIPPOLYTE PLEURACANTHA
LAUREUTES PARVULUS
LEPTOCHELA SERRATORBITA
OGYRIDES ALPHAEROSTRIS
OGYRIDES LIMICOLA
PERCLIMENES LINGICAUDATUS
PROCESA HEMPHILLI
PROCESA VICINA
SYNALPEUS SP.
UNIDENTIFIED SP.
CUMACEA
CYCLAPSIS SP.
CYCLAPSIS VARIANS
OXYUROSTYLIIS SMITHI

SPILOCUMA SALOMANI
UNIDENTIFIED SP.
ISOPODA
ANCINA DEPRESSUS
APANTHURA MAGNIFICA
CHIRIDCTEA EXCAVATA
EDOTEA MONTOSA
LEPTOSTRACA
NEBALIA SP.
MYSIIDAEA
BOWMANIELLA SP.
MYSIDOPSIS BIGELOWI
PRAUNUS FLEXUOSUS
UNIDENTIFIED SP.
OSTRACCA
HAPLOCYTHERIDEA SEPTIPUNCTATA
SARSIELLA CHILDI
UNIDENTIFIED SP.
PENAEIDA
ACETES AMERICANUS
LUCIFER FAXONI
PENAEUS DUORARUM
SICYCINIA BREVIROSTRIS
SICYCINIA SP.
SICYCINIA TYPICA
TRACHYOPENAEUS CONSTRICTUS
STOMATCOPDA
ACANTHOSQUILLA BIMINIENSIS
CORNOPSIS EXCAVATRIX
TANADACEA
UNIDENTIFIED SP.

ECHINODERMATA
ASTEROIDEA (STARFISHES)
ASTROPECTEN ARTICULATUS
LUDIA ALTERNATA
ECHINICIDEA (SAND DOLLARS; URCHINS)
LYTECHINUS VARIEGATUS
MOIRA ATROPS
MELLITA QUINQUIE SPERFORATA
UNIDENTIFIED SP.
HOLOTHUROIDEA (SEA CUCUMBERS)
LEPTOSYNAPTA SP.
UNIDENTIFIED SP.
OPHIUROIDEA (BRITTLE STARS)
HEMIPHOLIS ELONGATA
MICRPHOLIS GRACILLIMA
OPHIOPHRAGMUS FILORANEUS
OPHIOPHRAGMUS MOOREI
OPHIOPHRAGMUS WURDEMANI
UNIDENTIFIED SP.

HEMICORDATA
ENTEROPNEUSTA (ACORN WORMS)
UNIDENTIFIED SP.

CEPHALOCHORDATA (LANCELETS)
BRANCHIOSTOMA FLORIDAE

VERTEBRATA
PISCES (FISHES)
GOBIIDAE, UNIDENTIFIED SP.
HEMIPTERONCTUS NOVACULA
LEPOPHIDIUM GERAELSSI
MICRCGOBIUS CARRI
OPHIDIIDAE, UNIDENTIFIED SP.
SYMPHURUS SP.

APPENDIX C

BIOLOGICAL AND BIOSTATISTICAL DATA BY STATION

Biological and biostatistical data, by station and date, for offshore stations (9-meter depth) before and after dredging--beach restoration project, Panama City Beach, Florida (November 1974 to November 1977).

BIOLOGICAL AND BIOSTATISTICAL DATA, BY STATION AND DATE, FOR OFFSHORE STATIONS (30-FOOT DEPTH) BEFORE AND AFTER DREDGING - BEACH RESTORATION PROJECT, PANAMA CITY BEACH, FLORIDA (NOVEMBER 1974 TO NOVEMBER 1977).

STATION A - CONTROL

SPECIES	NO. OF INDIVIDUALS					
	11/74	2/75	5/75	8/75	TOTAL	PCT.
PLATYHELMINTHES						
TURBELLARIA (FLATWORMS)						
UNIDENTIFIED SP.	0	0	4	1	5	0.58
NEMERTINEA (RIBBON WORMS)						
UNIDENTIFIED SP.	1	4	7	8	20	2.33
NEMATODA (ROUNDWORMS)						
UNIDENTIFIED SP.	0	19	7	18	44	5.12
MOLLUSCA (SHELLFISH)						
GASTROPODA (SNAILS)						
ACTECINA CANDEI	0	0	0	1	1	0.12
ACTECINA PUNCTOSTRIATUS	0	0	0	1	1	0.12
NATICA PUSILLA	0	0	0	2	2	0.23
OLIVELLA MULTICA	0	0	0	2	2	0.23
POLINICES DUPLICATUS	0	0	2	0	2	0.23
TEREREA DISLOCATA	0	0	1	0	1	0.12
PELECYPODA (CLAMS)						
ERVILIA CONCENTRICIA	0	0	1	1	2	0.23
LUCINA MULTILINEATA	0	2	2	4	8	0.93
ZERIPILOMA MARGARITACEUM	0	1	0	0	1	0.12
STRIGILLA MIRABILIS	0	0	2	10	12	1.40
TELLINA VERSICOLOR	0	0	1	19	20	2.33
ANNELIDA (SEGMENTED WORMS)						
OLIGOCHAETA						
UNIDENTIFIED SP.	22	35	5	0	62	7.22
POLYCHAETA						
APCPHICNOSPIO PYGMAEA	0	1	1	3	5	0.58
ARICITEA SP.	2	2	0	0	4	0.47
ARMANCIA MACULATA	5	2	18	4	29	3.38
ERANIA CLAVATA	0	0	0	1	1	0.12
ERANIA WELLFLEETENSIS	0	0	2	4	6	0.70
CAPITELLICAE UNIDENTIFIED SP.	0	2	0	0	2	0.23
DIOPATRA CUPREA	0	1	0	0	1	0.12
DISPIO UNCINATA	0	0	0	1	1	0.12
ETEONE LACTEA	0	0	1	7	8	0.93
GLYCERA AMERICANA	0	0	1	4	5	0.58
HAPLOSCLOLOPLOS FOLIOSUS	0	0	0	1	1	0.12
HAPLOSCLOLOPLOS ROBUSTUS	0	1	0	0	1	0.12
LUMBRINERIS CRUZENSIS	0	0	0	11	11	1.28
MAGELCNA RIOJAI	0	0	1	0	1	0.12
MAGELCNA SP.	0	0	1	0	1	0.12
MESOCHAEOPTERUS SAGITTARILIS	0	0	1	0	1	0.12
MINUSPIO CIRRIFERA	0	1	1	0	2	0.23
NEPHTYS BUCERA	0	0	0	2	2	0.23
NEPHTYS PICTA	0	2	7	6	15	1.75
ONUPHIS EREMITA OCULATA	1	0	0	0	1	0.12
PARANANIES SPECIOSA	0	0	0	1	1	0.12
PARACNIDES LYRA	19	5	0	1	25	2.91
PARAPRIONOSPPIO PINNATA	17	1	3	0	21	2.44
PHYLLOCOE ARENAE	0	0	4	0	4	0.47
PHYLLOCOE SP.	0	0	5	0	5	0.58
POECILOCHAETUS JOHNSONI	0	0	1	0	1	0.12
PRIONOSPPIO CRISTATA	47	76	4	5	132	15.37
SCOLELEPIS SQUAMATA	2	0	0	0	2	0.23
SCOLELEPIS TEXANA	0	4	5	0	9	1.05
SCOLOPLOPS RUBRA	0	1	0	0	1	0.12

STATION A - CONTROL
(CONTINUED)

SPECIES	NO. OF INDIVIDUALS						PCT.
	11/74	2/75	5/75	8/75	TOTAL		
<u>SIGAMBRA BASSI</u>	0	1	1	2	4	0.47	
<u>SPIO PETTIBONEAE</u>	7	5	9	1	22	2.56	
<u>SP TOCHAE TOP TERUS OCULATUS</u>	1	0	0	0	1	0.12	
<u>SP IOPHANES BOMBYX</u>	0	1	42	2	45	5.24	
ARTHROPODA (CRUSTACEANS)							
AMPHIPODA							
<u>ACANTHOHAUSTORIUS SP.</u>	0	0	8	2	10	1.16	
<u>LYSIANOPSIS SP.</u>	0	0	1	0	1	0.12	
<u>PROTOFAUSTORIUS SP.</u>	0	12	58	15	85	9.90	
<u>PSEUDOFIAUSTORIUS SP.</u>	0	3	4	3	10	1.16	
<u>PSEUCOPLATYISCHNOPUS SP.</u>	1	2	2	16	21	2.44	
<u>SYNCHETIDIUM SP.</u>	0	2	3	0	5	0.58	
ANOMURA							
<u>ALBUREA PARETII</u>	1	0	0	0	1	0.12	
EFACHYURA							
<u>PINNIXIA CRISTATA</u>	0	0	0	1	1	0.12	
<u>PINNCTHERES MACULATUS</u>	0	0	2	0	2	0.23	
<u>PORTUNUS GIBBESII</u>	0	0	0	1	1	0.12	
<u>PORTUNUS SPINIMANUS</u>	1	0	0	0	1	0.12	
<u>RANILLIA MURICATA</u>	0	0	0	2	2	0.23	
CARIDEA							
<u>PROCESSA HEMPHILLI</u>	0	0	7	0	7	0.81	
<u>PROCESSA VICINA</u>	0	0	0	1	1	0.12	
CLIMACEA							
<u>CYCLAPSIS VARIANS</u>	0	0	0	1	1	0.12	
<u>OXYUROSTYLIS SMITHI</u>	0	0	3	0	3	0.35	
UNIDENTIFIED SP.	0	0	0	2	2	0.23	
OSTRACCA							
UNIDENTIFIED SP.	0	0	0	8	8	0.93	
PENAEIDEA							
<u>SICYONIA BREVIROSTRIS</u>	0	1	0	0	1	0.12	
ECHINODERMA							
ECHINOICEA (SAND DOLLARS; URCHINS)							
<u>MELLITA GUINQUIESPERFORATA</u>	0	0	0	45	45	5.24	
HCLOTHURICEA (SEA CUCUMBERS)							
UNIDENTIFIED SP.	0	0	0	3	3	0.35	
OFHIURICEA (BRITTLE STARS)							
UNIDENTIFIED SP.	0	0	11	0	11	1.28	
CEPHALOCHORDATA (LANCELETS)							
<u>ERANISTOSTOMA FLORIDAE</u>	0	1	59	19	79	9.20	
VERTEBRATA							
PISCES (FISHES)							
<u>HEMIPTERACTUS NOVACULA</u>	0	0	0	1	1	0.12	
OPHIOTIDIIDAE, UNIDENTIFIED SP.	0	0	1	0	1	0.12	
TOTALS							
NC. SPECIES	129	188	299	243	859		
NC. IND. PER M2	15	27	41	43	75		
S-W INDEX - H'(LN)	2064	3008	4784	3888			
EVENNESS - J	1.923	2.154	2.801	3.113			
AV. NO. SPECIES	31.5				2.498		
AV. NC. IND. PER M2	34.36	0			AV. EVENNESS	0.736	

STATION B - CONTROL

SPECIES	NO. OF INDIVIDUALS					
	1/74	2/75	5/75	8/75	TOTAL	PCT.
CNIDARIA						
ACTINIARIA (SEA ANEMONES)						
UNIDENTIFIED SP.	0	0	0	2	2	0.17
PLATYHELMINTHES						
TURBELLARIA (FLATWORMS)						
UNIDENTIFIED SP.	0	0	2	1	3	0.26
NEMERTINEA (RIBBON WORMS)						
UNIDENTIFIED SP.	0	3	6	7	16	1.39
NEMATODA (ROUNDWORMS)						
UNIDENTIFIED SP.	0	18	2	11	31	2.70
MOLLUSCA (SHELLFISH)						
GASTROPODA (SNAILS)						
ACTECCINA CANDEI	0	0	0	6	6	0.52
PELECYFIDA (CLAMS)						
CHIONE CANCELLATA	0	1	0	0	1	0.09
ERVILIA CONCENTRICA	0	0	2	1	3	0.26
STRIGILLA MIRABILIS	0	1	7	74	82	7.14
TELLINA VERSICOLOR	0	0	0	28	28	2.44
ANNELIDA (SEGMENTED WORMS)						
CLIGOCCHAETA						
UNIDENTIFIED SP.	18	26	1	10	55	4.79
PCLYCHAETA						
AGLAOPHAMUS VERRILLI	1	0	0	0	1	0.09
AMPHARETE ACUTIFRONS		0	0	0	1	0.09
ANAITIDES ERYTHROPHYLLOPS	0	0	1	0	1	0.09
APOPRIONCSPIO PYGMAEA	0	0	2	0	2	0.17
ARICICEA FRAGILIS	1	0	0	1	2	0.17
ARMANCIA MACULATA	11	13	24	1	49	4.26
BRANIA WELL FLEETENSIS	4	1	1	3	9	0.78
CAPITELLIDA UNIDENTIFIED SP.		1	0	0	1	0.09
CALLIERIELLA SP.	0	0	0	2	2	0.17
CERAICNEREIS IRRITABILIS	0	0	0	0	2	0.17
CIRRATILLIDA UNIDENTIFIED SP.	0	1	0	0	1	0.09
DISPIC UNICNATA	0	0	0	0	1	0.09
EJECNE LACTEA	0	0	1	4	5	0.44
GLYCERA AMERICANA	0	0	0	3	3	0.26
GYPTIS VITTATA	4	1	0	0	5	0.44
HAPLOCSCLCPLCS FRAGILIS	0	1	0	0	1	0.09
HETELEMMASTUS FILIFCRMIS	3	0	0	0	3	0.26
LUMBIFINERIS CRUZENSIS	0	0	0	2	2	0.17
NAEGELIA SP.	1	0	0	0	1	0.09
MEDICIMMASTUS CALIFNIENSIS	0	0	0	1	1	0.09
MESECFAETCPTERUS SAGITTARIUS	0	0	0	3	3	0.26
MINUSCIP CIRRIFERA		1	0	0	1	0.09
NEPHHTYS BUCERA	0	0	1	0	1	0.09
NEPHHTYS PICTA	0	0	6	4	10	0.87
NOTIMMASTUS HEMIPCDUS	0	0	0	2	2	0.17
OPHELIA SP.	9	3	0	5	17	1.48
OWENIA FUSIFCRMIS	1	0	0	0	1	0.09
PARACNIDES LYRA	3	3	0	1	7	0.61
PARACNIS FULGENS	0	3	0	0	3	0.26
PARAPRICKNSPIC PINNATA	1	1	0	0	11	0.96
PHYLLOCOCCE ARENAE	0	0	2	0	2	0.17
PHYLLOCOCCE SP.	0	0	2	0	2	0.17
PECILICCHAETUS JOHNSONI	0	1	0	0	1	0.09

STATION B - CONTROL
(CONTINUED)

SPECIES	NO. OF INDIVIDUALS					
	11/74	2/75	5/75	8/75	TOTAL	PCT.
<u>FRICNCSPIO CRISTATA</u>	134	55	3	18	210	18.28
<u>SCOLELEPIS SQUAMATA</u>	1	1	0	0	2	0.17
<u>SCOLELEPIS TEXANA</u>	0	3	11	0	14	1.22
<u>SCOLELPS RUBRA</u>	0	2	0	0	2	0.17
<u>SPIO PETTIBONEAE</u>	9	1	22	5	37	3.22
<u>SPIONIDAE UNIDENTIFIED SP.</u>	2	0	0	0	2	0.17
<u>SPIOPLANES BCMBYX</u>	0	0	29	7	36	3.13
<u>TRAVISIA HOBSCNAE</u>	0	0	0	3	3	0.26
 SIPUNCULIDA (PEANUT WORMS)						
<u>SIPUNCULLUS LONGIPAPILLUS</u>	0	1	0	1	2	0.17
 ARTHROPODA (CRUSTACEANS)						
AMPHIPODA						
<u>ACANTHOHAUSTORIUS SP.</u>	0	6	16	7	29	2.52
<u>AMPELISCA SP.</u>	1	0	0	1	2	0.17
<u>LISTRIELLA SP.</u>	0	0	0	3	3	0.26
<u>MONOCULODES SP.</u>	0	0	0	1	1	0.09
<u>PROTOHAUSTORIUS SP.</u>	0	29	100	8	137	11.92
<u>PSEUDOHALSTORIUS SP.</u>	0	0	1	1	2	0.17
<u>PSEUDOPLATYISCHNOPUS SP.</u>	1	4	3	11	19	1.65
<u>SYNCHELIDIUM SP.</u>	3	0	6	1	10	0.87
BRACHYURA						
<u>PINNIXIA CRISTATA</u>	0	0	1	0	1	0.09
<u>PINNIXIA SAYANA</u>	0	0	0	6	6	0.52
<u>RANILIA MURICATA</u>	0	0	0	2	2	0.17
CARIDEA						
<u>PROCESSA FEMPHILLI</u>	1	0	1	11	13	1.13
<u>PROCESSA VICINA</u>	0	0	0	1	1	0.09
CUMACEA						
<u>CYCLAPSIIS VARIANS</u>	0	0	0	2	2	0.17
<u>UNIDENTIFIED SP.</u>	0	0	0	3	3	0.26
OSTRACOLA						
<u>UNIDENTIFIED SP.</u>	0	0	0	3	3	0.26
PEMACEA						
<u>TRACHYPENAEUS CONSTRICTUS</u>	1	0	0	0	1	0.09
 ECHINODEMATA						
ECHINICIDEA (SAND DOLLARS; URCHINS)						
<u>MELLITA QUINQUESPERFORATA</u>	5	0	0	6	11	0.96
<u>UNIDENTIFIED SP.</u>	0	0	7	0	7	0.61
HOLOTHROIDEA (SEA CUCUMBERS)						
<u>LEPTOCYANAPTA SP.</u>	0	0	0	1	1	0.09
OPHIURICIDEA (BRITTLE STARS)						
<u>OPHICERHRAGMUS FILOGRANAEUS</u>	1	0	0	0	1	0.09
 CEPHALOCHORDATA (LANCELETS)						
<u>BRANCHICISTOMA FLORIDAE</u>	10	69	74	51	204	17.75
 VERTEBRATA						
PISCES (FISHES)						
<u>MICREGOBius CARRI</u>	1	0	0	0	1	0.09
 TOTALS						
NO. SPECIES	236	249	334	328	1149	
NO. IND. PER M2	27	26	28	47	75	
S-W INDEX - F(LN)	3808	3984	5344	5248		
EVENNESS - J	1.898	2.247	2.320	3.000		
AV. NO. SPECIES	32.0	AV. S-W INDEX	2.366			
AV. NO. IND. PER M2	4596.0	AV. EVENNESS	0.685			

TREASURE ISLAND MOTEL (STATION 1) - CONTROL

SPECIES	NO. OF INDIVIDUALS				TOTAL	PCT.
	4/76	6/76	7/76			
CNIDARIA						
ACTINIARIA (SEA ANEMONES)						
UNIDENTIFIED SP.	0	1	2		3	0.06
PLATYHELMINTHES						
TURBELLARIA (FLATWORMS)						
UNIDENTIFIED SP.	0	3	0		3	0.06
NEMERTINEA (RIBBON WORMS)						
UNIDENTIFIED SP.	25	37	62	124	2.34	
NEMATODA (ROUNDWORMS)						
UNIDENTIFIED SP.	25	48	133	206	3.89	
PHORONIDA (PHORONIDS)						
<u>PHORONIS ARCHITECTA</u>	2	2	1	5	0.09	
MOLLUSCA (SHELLFISH)						
GASTROPODA (SNAILS)						
<u>ACTECCINA CANALICULATA</u>	1	1	0	2	0.04	
<u>ACTECCINA CANDEI</u>	0	18	24	42	0.79	
<u>CAECUM FLORIDANUM</u>	0	9	20	29	0.55	
<u>CAECUM IMERICATUM</u>	0	0	1	1	0.02	
<u>CYLICINELLA BICENTATA</u>	0	3	11	14	0.26	
<u>DIASTOMA VARIUM</u>	0	0	5	5	0.09	
<u>NATICA PUSILLA</u>	0	0	16	16	0.30	
<u>OLIVELLA EULLULA</u>	0	0	11	11	0.21	
<u>OLIVELLA MUTICA</u>	1	0	2	3	0.06	
<u>OLIVELLA PUSILLA</u>	0	3	0	3	0.06	
<u>TURBONILLA CONRADI</u>	0	0	10	10	0.19	
<u>TURBONILLA ELEGANTULA</u>	0	0	5	5	0.09	
<u>TURBONILLA SP.</u>	0	0	1	1	0.02	
PELECYPODA (CLAMS)						
<u>ANADARA FLORICANA</u>	0	3	22	25	0.47	
<u>CHICOREUS GRUS</u>	0	1	0	1	0.02	
<u>CUNINGIA T. VANHYNINGI</u>	0	0	1	1	0.02	
<u>DIPLOCINTA SP.</u>	0	0	2	2	0.04	
<u>ERVILIA CIRCENTRICA</u>	1	15	223	239	4.52	
<u>LEPTAENA SP.</u>	3	0	10	13	0.25	
<u>LUCINA MULTILINEATA</u>	6	35	30	71	1.34	
<u>LUCINA FADIANS</u>	1	0	0	1	0.02	
<u>LYONSTIA H. FLORICANA</u>	0	2	4	6	0.11	
<u>MACROCCALLISTA NIMBOSA</u>	0	0	1	1	0.02	
<u>MACTRA SP.</u>	0	0	1	1	0.02	
<u>PAPYRIDEA SOLENIFORMIS</u>	1	0	0	1	0.02	
<u>PARVILUCINA BLANCA</u>	1	0	0	1	0.02	
<u>FERIFLUMA MARGARITACEUM</u>	1	1	0	2	0.04	
<u>PITASIMPSCHNI</u>	1	4	5	10	0.19	
<u>SEMELE FRANCICUA</u>	0	0	6	6	0.11	
<u>STRIGILLA MIRABILIS</u>	1	1	22	24	0.45	
<u>TELLINA TEXANA</u>	0	7	90	97	1.83	
<u>TELLINA VERSICCL CR</u>	13	43	555	611	1.54	
<u>VENEFIDAE UNIDENTIFIED SP.</u>	0	9	3	12	0.23	
ANNELIDA (SEGMENTED WORMS)						
<u>CLIGOCHEATA</u>						
UNIDENTIFIED SP.	46	20	31	97	1.83	
<u>PCLYCHEATA</u>						
<u>AMPHAEAE ACUTIFFENS</u>	5	0	0	5	0.09	
<u>APCFISHESPIO PYGMAEA</u>	2	5	6	13	0.25	

TREASURE ISLAND MOTEL (STATION 1) - CONTROL
(CONTINUED)

SPECIES	NO. OF INDIVIDUALS				
	4/76	6/76	7/76	TOTAL	PCT.
<u>ARMANCIA AGILIS</u>	0	1	6	7	0.13
<u>ARMANCIA MACULATA</u>	11	7	29	47	0.89
<u>ERANIA CASYCHIS AMERICANA</u>	1	0	0	1	0.02
<u>ERANIA CLAVATA</u>	0	0	1	1	0.02
<u>ERANIA WELLFLEETENSIS</u>	1	3	10	14	0.26
<u>CAPITELLA CAPITATA</u>	0	0	1	1	0.02
<u>CAULLERIELLA SP.</u>	0	0	1	1	0.02
<u>CERATOCNEREIS MIRABILIS</u>	0	0	3	3	0.06
<u>CHONE SP.</u>	0	1	9	10	0.19
<u>CIOPATRA CUPREA</u>	0	0	2	2	0.04
<u>CISPIC UNCINATA</u>	3	1	0	4	0.08
<u>ENOPLCERANCHUS SANGUINEUS</u>	0	0	1	1	0.02
<u>ETECNE LACTEA</u>	2	5	7	14	0.26
<u>EULALIA SANGUINEA</u>	0	0	1	1	0.02
<u>EXOGNE DISPAR</u>	0	0	1	1	0.02
<u>GLYCERA AMERICANA</u>	1	33	25	59	1.11
<u>GLYCERA CIERANCHIATA</u>	0	0	2	2	0.04
<u>GLYCERA OXYCEPHALA</u>	8	0	0	8	0.15
<u>GLYCERA SP.</u>	0	0	2	2	0.04
<u>GONIATA LITTOREA</u>	0	24	17	41	0.77
<u>GRUEFULEPIS MEXICANA</u>	0	1	0	1	0.02
<u>GYPTIS VITTATA</u>	0	0	1	1	0.02
<u>HAPLCSCCLOPLCS FOLIOSUS</u>	2	4	8	14	0.26
<u>FARMOTICE LUNULATA</u>	0	1	0	1	0.02
<u>ISOLIA PULCHELLA</u>	1	0	0	1	0.02
<u>LUMERTINERIS CRUZENSIS</u>	2	146	940	1088	20.56
<u>LUMBRINERIS TETRAURA</u>	0	5	0	5	0.09
<u>LYSILLA ALBA</u>	1	0	0	1	0.02
<u>MAGELCNA RIOJAI</u>	1	0	0	1	0.02
<u>MAGELCNA SP.</u>	0	1	6	7	0.13
<u>MEDICMASTUS CALIFORNIENSIS</u>	0	2	0	2	0.04
<u>MESOCHEAOPTERUS SAGITTARIUS</u>	0	0	35	35	0.66
<u>MYRICCELE SP.</u>	1	0	0	1	0.02
<u>NEANTIES ACUMINATA</u>	1	0	0	1	0.02
<u>NEANTIES SUCCINEA</u>	0	0	1	1	0.02
<u>NEPHTYS BUCERA</u>	2	2	11	15	0.28
<u>NEPHTYS PICTA</u>	48	37	56	141	2.66
<u>NEREIS PELAGICA</u>	1	0	6	7	0.13
<u>NOTOMASTUS HEMIPODUS</u>	0	2	2	4	0.08
<u>NOTOMASTUS LATERICELLS</u>	0	3	0	3	0.06
<u>ONUPHIS EREMITA OCULATA</u>	3	17	32	52	0.98
<u>ONUPHIS NEBULOSA</u>	2	1	0	3	0.06
<u>CWENIA FUSIFORMIS</u>	7	10	8	25	0.47
<u>PARANAITES SPECIOSA</u>	0	2	0	2	0.04
<u>PARACNIDES LYRA</u>	3	6	3	12	0.23
<u>PARACNIS FULGENS</u>	4	4	10	16	0.34
<u>PARAFRIONOSPIO PINNATA</u>	16	0	1	17	0.32
<u>PHYLLODCE ARENAE</u>	5	3	24	32	0.60
<u>PISTA CRISTATA</u>	1	0	0	1	0.02
<u>PISTA PALMATA</u>	0	0	1	1	0.02
<u>POECILOCHAETUS JOHNSONI</u>	1	0	0	1	0.02
<u>POLYDORA TETRABRANCHIA</u>	0	4	0	4	0.08
<u>PRIONOSPIO CRISTATA</u>	16	105	205	326	6.16
<u>PRIONOSPIO STEENSTRUPI</u>	0	0	11	11	0.21
<u>PSEUDEURYTHOE AMBIGUA</u>	1	0	0	1	0.02
<u>RULLIFERINEREIS MEXICANA</u>	0	2	6	6	0.15
<u>SABELLA MICROPHTHALMA</u>	0	0	1	1	0.02
<u>SCOLELEPIS SQUAMATA</u>	0	1	1	2	0.04
<u>SCOLELEPIS TEXANA</u>	4	2	3	9	0.17
<u>SCOLCOPLOS ARMIGER</u>	0	1	17	16	0.34
<u>SIGALION ARENICOLA</u>	0	1	0	1	0.02

TREASURE ISLAND MOTEL (STATION 1) - CONTROL
(CONTINUED)

SPECIES	NO. OF INDIVIDUALS				
	4/76	6/76	7/76	TOTAL	PCT.
<u>SIGANERA BASSI</u>	1	1	5	7	0.13
<u>SPIC FETTIBONEAE</u>	12	1	15	28	0.53
<u>SPICCFAETCTPTEFUS OCULATUS</u>	4	0	2	6	0.11
<u>SPICCFHANES BCMBYX</u>	336	40	21	397	7.50
<u>STHENELAIS BCA</u>	1	0	1	2	0.04
 <u>SIPUNCULIDA (PEANUT WORMS)</u>					
<u>GOLFINGIA TRICHOCEPHALA</u>	1	0	1	2	0.04
 <u>ARTHROPODA (CRUSTACEANS)</u>					
<u>AMPHIPODA</u>					
<u>ACANTHCHAUSTORIUS SP.</u>	1	0	7	8	0.15
<u>AMPELISCA ABCITA</u>	0	1	0	1	0.02
<u>AMPELISCA VERRILLI</u>	2	7	89	98	1.85
<u>ARGISSA SP.</u>	0	1	5	6	0.11
<u>CORCFHIMUM SP.</u>	0	0	1	1	0.02
<u>CY MADUSA SP.</u>	1	0	0	1	0.02
<u>ERICITHONIUS SP.</u>	0	0	1	1	0.02
<u>HYPFIA SP.</u>	0	0	1	1	0.02
<u>LEPIACTYLUS SP.</u>	0	1	0	1	0.02
<u>LISTFIELLA SP.</u>	0	1	6	7	0.13
<u>LYSIANOPSIS SP.</u>	0	1	0	1	0.02
<u>MICRCPRCTOPUS SP.</u>	0	3	0	3	0.06
<u>MONOCULODES SP.</u>	1	1	25	27	0.51
<u>PARAPLOXUS SP.</u>	0	1	1	2	0.04
<u>PHOTIS SP.</u>	0	1	0	1	0.02
<u>PROTCHAUSTORIUS SP.</u>	2	0	27	29	0.55
<u>PSEUDOCHAUSTORIUS SP.</u>	1	1	7	9	0.17
<u>PSEUCOPLATYISCHNOPUS SP.</u>	56	19	209	284	5.37
<u>SYNCHELIDIUM SP.</u>	19	17	58	94	1.78
<u>TIRON BIOSCELLATUS</u>	0	0	2	2	0.04
<u>TIRON SP.</u>	1	0	0	1	0.02
<u>ANOMURA</u>					
<u>ALBUNEA PARETII</u>	0	1	0	1	0.02
<u>LEPIDOPA WEBSTERI</u>	0	0	3	3	0.06
<u>PAGURUS LONGICARPUS</u>	0	0	8	8	0.15
<u>BRACHYURA</u>					
<u>CALLINECTES SP.</u>	0	0	5	5	0.09
<u>HEPATUS EPHELITICUS</u>	0	0	3	3	0.06
<u>LIBINIA CUBIA</u>	0	0	1	1	0.02
<u>ovalipes OCELLATUS</u>	0	0	1	1	0.02
<u>PERS EPICNA P. AQUILONARIS</u>	0	0	1	1	0.02
<u>PINNIXIA CRISTATA</u>	6	0	0	6	0.11
<u>FINNIXIA RETINENS</u>	0	3	8	11	0.21
<u>PINNIXIA SAYANA</u>	0	2	4	6	0.11
<u>CALLIANASSA</u>					
<u>CALLIANASSA JAMAICENSE</u>	0	0	1	1	0.02
<u>CARIDEA</u>					
<u>ALPHEUS HETEROCHAELIS</u>	0	1	0	1	0.02
<u>AMBIDEXTER SYMMETRICUS</u>	0	1	0	1	0.02
<u>HIPPOLYTE PLEURACANTHA</u>	0	0	1	1	0.02
<u>LATREUTES PARVULLUS</u>	0	0	3	3	0.06
<u>PROCESSA FEMPHILLI</u>	0	3	3	6	0.11
<u>PROCESSA VICINA</u>	0	1	0	1	0.02
<u>CUMACEA</u>					
<u>CYCLAPSIS SP.</u>	0	1	6	7	0.13
<u>CYCLAPSIS VARIANS</u>	14	20	26	60	1.13
<u>OXYUOSTYLIS SMITHI</u>	4	11	13	28	0.53
<u>ISOPODA</u>					
<u>EGOTEA MONTOSA</u>	0	1	4	5	0.09
<u>LEFTCSTRACA</u>					

TREASURE ISLAND MOTEL (STATION 1) - CONTROL
(CONTINUED)

SPECIES	NO. OF INDIVIDUALS				PCT.
	4/76	6/76	7/76	TOTAL	
<u>NEEALIA SP.</u>	0	0	6	6	0.11
<u>MYSTICACEA</u>					
<u>PRAUULIS FLEXUCCUS</u>	0	1	0	1	0.02
<u>UNIDENTIFIED SP.</u>	3	1	2	6	0.11
<u>CSTRACCIA</u>					
<u>HAPLOCYCTHERIDEA SEPTIFUNCTATA</u>	0	29	0	29	0.55
<u>UNIDENTIFIED SP.</u>	0	0	17	17	0.32
<u>FENACEA</u>					
<u>SICYCLIA TYPICA</u>	0	1	0	1	0.02
<u>STCMATCFCD</u>					
<u>ACANTHOSQUILLA BIMINIENSIS</u>	0	1	3	4	0.08
 <u>ECHINOCEPHALATA</u>					
<u>ASTERIOIDEA (STARFISHES)</u>					
<u>ASTROPECTEN ARTICULATI</u>	0	0	1	1	0.02
<u>ECHINOIDEA (SAND DOLLARS; URCHINS)</u>					
<u>MELITTA QUINQUIESPERFORATA</u>	1	50	123	174	3.29
<u>HOLOTHURIDEA (SEA CUCUMBERS)</u>					
<u>UNIDENTIFIED SP.</u>	0	1	0	1	0.02
<u>OPHIURIDEA (BRITTLE STARS)</u>					
<u>OPHICPHRAGMUS WURDEMANNI</u>	0	1	1	2	0.04
<u>UNIDENTIFIED SP.</u>	0	8	14	22	0.42
 <u>HEMICORDATA</u>					
<u>ENTEROPNEUSTA (ACORN WORMS)</u>					
<u>UNIDENTIFIED SP.</u>	0	3	0	3	0.06
 <u>CEPHALOCHORDATA (LANCETTS)</u>					
<u>BRANCHICISTICMA FLORIDAE</u>	0	4	23	27	0.51
 <u>VERTEBRATA</u>					
<u>FISCES (FISHES)</u>					
<u>HEMIPIERONOTUS NOVACULA</u>	0	0	1	1	0.02
 <u>TOTALS</u>	753	951	3589	5293	
NO. SPECIES	67	94	120	166	
NO. IND. PER M ²	1506	1902	7178		
S-W INDEX - H ¹ (LN)	2.516	3.482	3.084		
EVENNESS - J	0.598	0.766	0.644		
AV. NO. SPECIES	93.7	AV. S-W INDEX	3.027		
AV. NO. IND. PER M ²	3528.7	AV. EVENNESS	0.670		

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL
E/10/76

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
CNIDARIA				
ACTINIARIA (SEA ANEMONES)				
UNIDENTIFIED SP.	4	0.287	0	0.0
PLATYHELMINTHES				
TURBELLARIA (FLATWORMS)				
UNIDENTIFIED SP.	1	0.072	0	0.0
NEMERTINEA (RIBBON WORMS)				
UNIDENTIFIED SP.	23	1.650	1	1.235
NEMATODA (ROUNDWORMS)				
UNIDENTIFIED SP.	33	2.367	2	2.469
MOLLUSCA (SHELLFISH)				
GASTROPODA (SNAILS)				
CAECUM FLICKIDANUM	2	0.143	1	1.235
CYLICHNELLA BIDENTATA	1	0.072	0	0.0
NASSARIUS ACUTUS	1	0.072	0	0.0
NATICA PUSILLA	2	0.143	0	0.0
OLIVELLA BULLULA	3	0.215	0	0.0
TEREERA DISLOCATA	2	0.143	0	0.0
TURBONILLA CONRADII	2	0.143	0	0.0
PELCYPODA (CLAMS)				
CUMINGIA TELLINOIDES	3	0.215	0	0.0
ERVILIA CONCENTRICA	38	2.726	0	0.0
LEPTES SP.	7	0.502	0	0.0
LUCINA MULTILINEATA	8	0.574	0	0.0
STRIGILLA MIRABILIS	13	0.933	0	0.0
TELLINA TAMPAENSIS	1	0.072	0	0.0
TELLINA TEXANA	93	6.671	0	0.0
TELLINA VERSICOLOR	123	8.824	12	14.815
ANNELIDA (SEGMENTED WORMS)				
CLIOCHETA				
UNIDENTIFIED SP.	7	0.502	0	0.0
POLYCHAETA				
AMPHARETE ACUTIFRONS	1	0.072	0	0.0
ARMANDIA MACULATA	1	0.072	0	0.0
AXIOTHELLA MUCOSA	1	0.072	0	0.0
BRANIA WELLFLEETENSIS	14	1.004	1	1.235
CAULERIETELLA SP.	1	0.072	1	1.235
CHONE SP.	1	0.072	0	0.0
ETEONE LACTEA	4	0.287	1	1.235
GLYCERA AMERICANA	6	0.430	1	1.235
GLYCERA SP.	2	0.143	0	0.0
GOONIACA LITOREA	0	0.0	1	1.235
GYPTIS VITIATA	0	0.0	1	1.235
HAPLOCYCLOPLIGS FOLICUSUS	2	0.143	0	0.0
PARMCTHOE LUNULATA	1	0.072	0	0.0
LOIMIA MEDUSA	1	0.072	0	0.0
LUMEFINERIS CRUZENSIS	669	47.991	38	46.914
MAGELNA SP.	1	0.072	0	0.0
MESOCHAETOPTERUS SAGITTARIUS	2	0.143	0	0.0
NEANTIDES ACUMINATA	2	0.143	0	0.0
NEPHTYS BUCERA	1	0.072	0	0.0
NEPHTYS PICTA	5	0.359	0	0.0
ONUPFIS EREMITA OCULATA	9	0.646	0	0.0
ONUPFIS NEBULOSA	11	0.789	4	4.938
PARANAITES SPECIOSA	5	0.359	0	0.0

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL
 8/10/76
 (CONTINUED)

SPECIES	NO. CF TOTAL	IND. (C.) PERCENT	NO. CF IND. (E.) TOTAL PERCENT	
			NO. CF TOTAL	IND. (E.) PERCENT
<u>PHYLLOCOCCE ARENAE</u>	5	0.359	0	0.0
<u>PRIONOSPIS CRISTATA</u>	69	4.950	0	0.0
<u>RULLIERINEREA MEXICANA</u>	3	0.215	1	1.235
<u>SCOLOPLES ARMIGER</u>	14	1.004	5	6.173
<u>SIGAMERA BASSI</u>	5	0.359	0	0.0
<u>SPIO PETTIBONEAE</u>	2	0.143	0	0.0
<u>SPIOPHANES BOMBIX</u>	7	0.502	0	0.0
ARTHROPODA (CRUSTACEANS)				
AMPHIPODA				
<u>ACANTHOCHAUSTORIUS SP.</u>	1	0.072	0	0.0
<u>AMPELISCA VERRILLI</u>	3	0.215	0	0.0
<u>COROPHUM SP.</u>	1	0.072	0	0.0
<u>MICROPROTOPUS SP.</u>	1	0.072	0	0.0
<u>MONOCLOODES SP.</u>	5	0.359	0	0.0
<u>PROTHALASTICRIS SP.</u>	15	1.076	4	4.938
<u>PSEUDCHAUSTORIUS SP.</u>	8	0.574	1	1.235
<u>PSEUDOFILATYISCHINCUS SP.</u>	74	5.308	1	1.235
<u>SYNCHELIDIUM SP.</u>	10	0.717	0	0.0
BRACHYURA				
<u>OVALIPES OCELLATUS</u>	1	0.072	0	0.0
<u>PINNIXIA RETINENS</u>	3	0.215	0	0.0
CARIDEA				
<u>PROCESSA HEMPHILLI</u>	2	0.143	0	0.0
UNIDENTIFIED SP.	2	0.143	0	0.0
CUMACEA				
<u>CYCLAPSIS SP.</u>	4	0.287	0	0.0
<u>CYCLAPSIS VARIANS</u>	5	0.359	0	0.0
<u>CXYUROSTYLLIS SMITHI</u>	1	0.072	0	0.0
ISOPODA				
<u>EDOTEA MONTOSA</u>	3	0.215	0	0.0
mysidacea				
UNIDENTIFIED SP.	1	0.072	0	0.0
OSTRACOLA				
UNIDENTIFIED SP.	12	0.861	0	0.0
PELAGICA				
<u>SICYCHNIA TYPICA</u>	0	0.0	1	1.235
ECHINODERMATA				
ASTEROIDEA (STARFISHES)				
<u>ASTROPECTEN ARTICULATUS</u>	1	0.072	0	0.0
ECHINOIDEA (SAND DOLLARS; URCHINS)				
<u>MELITTA QUINQUEPERFORATA</u>	14	1.004	2	2.469
OPHIURIDEA (BRITTLE STARS)				
<u>OPHICLHRAGMUS WUCDEMANI</u>	1	0.072	0	0.0
HEMICHORDATA				
ENTEROPNEUSTA (ACORN WORMS)				
UNIDENTIFIED SP.	2	0.143	0	0.0
CEPHALOCHORDATA (LANCELETS)				
<u>FRANCISIOMA FLORIDAE</u>	12	0.861	2	2.469
TOTALS	1394		81	
NO. SPECIES		72		20
NO. IND. PER M2		5576		324
S-W INDEX - H'(LN)		2.3604		2.0322
EVENNESS - J		0.5519		0.6784

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL
8/18/76

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
CNIDARIA				
ACTINIARIA (SEA ANEMONES)				
UNIDENTIFIED SP.	3	0.218	0	0.0
PLATYHELMINTHES				
TURBELLARIA (FLATWORMS)				
UNIDENTIFIED SP.	8	0.582	0	0.0
NEMERTINEA (RIBBON WORMS)				
UNIDENTIFIED SP.	33	2.400	3	1.230
NEMATODA (ROUNDWORMS)				
UNIDENTIFIED SP.	59	4.291	3	1.230
MOLLUSCA (SHELLFISH)				
GASTROPODA (SNAILS)				
<u>ACTECCIMA CANDEI</u>	1	0.073	0	0.0
<u>NATICA PUSILLA</u>	3	0.218	0	0.0
<u>CLIVELLIA PULLULA</u>	5	0.364	0	0.0
<u>TURBONILLA CONRADII</u>	1	0.073	0	0.0
PELECYPODIA (CLAMS)				
<u>ERVLIA CONCENTRICA</u>	17	1.236	0	0.0
<u>LEPTICA SP.</u>	4	0.291	0	0.0
<u>LUCINA MULTILINEATA</u>	11	0.800	0	0.0
<u>PAPYRIFERA SOL ENIFORMIS</u>	1	0.073	0	0.0
<u>PERIPLOCA MARGARIACEUM</u>	2	0.145	0	0.0
<u>PITAF SIMPSONI</u>	2	0.145	3	1.230
<u>STRIGILLA MIRABILIS</u>	13	0.945	0	0.0
<u>TELLINA TEXANA</u>	55	4.000	2	0.820
<u>TELLINA VERSICOLOR</u>	79	5.745	18	7.377
ANNELIDA (SEGMENTED WORMS)				
OLIGOCHAETA				
UNIDENTIFIED SP.	15	1.091	0	0.0
POLYCHAETA				
<u>AMPHARETE ACTIIFENS</u>	1	0.073	0	0.0
<u>APOPLOCHIUS PYGMAEA</u>	0	0.0	1	0.410
<u>ARMANDIA MACULATA</u>	12	0.873	1	0.410
<u>BRANIA WELLFLEETENSIS</u>	9	0.655	0	0.0
<u>CAPITELLA CAPITATA</u>	1	0.073	0	0.0
<u>CAPITELLOIDES JCNESSI</u>	1	0.073	1	0.410
<u>CAULLERIELLA SP.</u>	1	0.073	0	0.0
<u>CERATONEFELIS IRRITABILIS</u>	7	0.509	1	0.410
<u>CHONE SP.</u>	3	0.218	0	0.0
<u>DIOPATRA CUPREA</u>	1	0.073	1	0.410
<u>ETECNE LACTEA</u>	2	0.145	1	0.410
<u>EXOCNE DISPAR</u>	1	0.073	0	0.0
<u>FLABELLICERA SP.</u>	1	0.073	0	0.0
<u>GLYCERA AMERICANA</u>	3	0.218	1	0.410
<u>GLYCERA DIBRANCHIATA</u>	6	0.436	1	0.410
<u>GLYCERA SP.</u>	4	0.291	0	0.0
<u>CONIACA LITOREA</u>	1	0.073	0	0.0
<u>FAPLOSCOLOPLOS FOLIOSIS</u>	0	0.0	3	1.230
<u>FARMOTHOE LUNULATA</u>	1	0.073	0	0.0
<u>LUMBFINERIS CRUZENSIS</u>	499	36.291	113	46.311
<u>MAGELONA SP.</u>	1	0.073	0	0.0
<u>MESOCHAEOPTERUS SAGITTARILIS</u>	4	0.291	3	1.230
<u>NEPHIYS BUCERA</u>	1	0.073	0	0.0
<u>NEPHIYS PICTA</u>	5	0.655	0	0.0
<u>ONUPHIS EREMITA OCULATA</u>	0	0.0	1	0.410

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL
 8/18/76
 (CONTINUED)

SPECIES	NO. OF IND.	(C.)	NO. OF IND.	(E.)
	TOTAL	PERCENT	TOTAL	PERCENT
<u>CNUPHIS NEBULOSA</u>	7	0.509	0	0.0
<u>PARANAITES SPECIOSA</u>	1	0.073	0	0.0
<u>PARANICES LYRA</u>	0	0.0	2	C.820
<u>PARACIS FULGENS</u>	1	0.073	0	0.0
<u>PARAPRIONOSPIG PINNATA</u>	1	0.073	2	C.820
<u>PHYLLOCCE ARENAE</u>	2	0.218	2	C.820
<u>POLYDORA TETRABRANCHIA</u>	1	0.073	1	C.410
<u>PRIONCSPIO CRISTATA</u>	200	14.545	43	17.623
<u>RULLIFERINEREIS MEXICANA</u>	4	0.291	0	0.0
<u>SCOLEPOLCS ARMIGER</u>	30	2.182	7	2.869
<u>SIGALIEN ARENICOLA</u>	2	0.145	0	0.0
<u>SIGAMERA BASSI</u>	9	0.655	0	0.0
<u>SPIO PETTIBONEAE</u>	6	0.436	0	0.0
<u>SPIOPHANES BOMBYX</u>	5	0.364	0	0.0
 <u>SIPUNCULICA</u> (PEANUT WORMS)				
<u>GOLFINGIA TRICHOCEPHALA</u>	1	0.073	1	C.410
 <u>ARTHROPODA</u> (CRUSTACEANS)				
<u>AMPHIPODA</u>				
<u>ACANTHOAUSTORIUS SP.</u>	12	0.873	0	0.0
<u>AMPELISCA ABDITA</u>	1	0.218	1	C.410
<u>AMPELISCA VERRILLI</u>	15	1.091	3	1.230
<u>ARGISSA SP.</u>	2	0.145	0	0.0
<u>MONOCULICODES SP.</u>	0	0.0	1	C.410
<u>PROTOHALSTORIUS SP.</u>	15	1.091	0	0.0
<u>PSEUDOHALSTORIUS SP.</u>	6	0.436	0	0.0
<u>PSEUDODPLATYPS SCHNPUS SP.</u>	49	3.564	4	1.639
<u>SYNCHELIDILUM SP.</u>	13	0.945	1	C.410
<u>BRACHYURA</u>				
<u>CALLINECTES SP.</u>	1	0.073	0	0.0
<u>PINNIXIA RETINENS</u>	5	0.364	0	0.0
<u>CALLIANASSIDA</u>				
<u>CALLIANASSA JAMAICENSIS</u>	0	0.0	3	1.230
<u>CARIDEA</u>				
<u>FRCESSA TEMPILLI</u>	7	0.509	0	0.0
<u>FRCESSA VICINA</u>	3	0.218	1	C.410
<u>CUMACEA</u>				
<u>CYCLAPSIS SP.</u>	5	0.364	0	0.0
<u>CYCLAPSIS VARIANS</u>	12	0.873	4	1.639
<u>OXYUROSTYLIS SMITHI</u>	7	0.509	5	2.049
<u>LEPTOSTRACA</u>				
<u>NEBALIA SP.</u>	1	0.073	1	C.410
<u>MYSIIDAEA</u>				
<u>UNIDENTIFIED SP.</u>	2	0.145	1	C.410
<u>OSTRACCCA</u>				
<u>UNIDENTIFIED SP.</u>	10	0.727	2	C.820
<u>PENAEIDA</u>				
<u>SICYCNIA BREVIROSTRIS</u>	0	0.0	1	C.410
<u>STOMATOPODA</u>				
<u>ACANTHOSQUILLA BIMINIENSIS</u>	0	0.0	1	C.410
 <u>ECHINODERMATA</u>				
<u>ASTEROIDEA (STARFISHES)</u>				
<u>ASTROPECTEN ARTICULATUS</u>	1	0.073	0	0.0
<u>ECHINOCETEA (SAND DOLLARS; URCHINS)</u>				
<u>MELLITIA GLINGLIESPERFICRATA</u>	15	1.091	0	0.0
<u>HOLOTHURIDEA (SEA CUCUMBERS)</u>				
<u>LEPICSYNAPTA SP.</u>	2	0.145	0	0.0
<u>OPHTURIDEA (BRITTLE STARS)</u>				
<u>OPHICHRAGMUS WURDEMANI</u>	1	0.073	0	0.0

APPENDIX B (CONTINUED)

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL
8/18/76
(CONTINUED)

SPECIES	NO. TOTAL	CF PERCENT	IND. (C.)		IND. (E.)	
			TOTAL	PERCENT	TOTAL	PERCENT
UNIDENTIFIED SP.	2	0.145	0	0.0		
HEMICHRICDATA ENTEROPNEUSTA (ACORN WORMS)	1	0.073	0	0.0		
UNIDENTIFIED SP.						
CEPHALOCHORDATA (LANCELETS)						
<u>BRANCHICISTOMA FLORIDAE</u>	32	2.327	0	0.0		
VERTEBRATA						
PISCES (FISHES)						
<u>SYMPHURUS SP.</u>	1	0.073	0	0.0		
TOTALS	1375		244			
NO. SPECIES		80		38		
NO. IND. FER M2		5500		576		
S-W INDEX - H'(LN)		2.7517		2.1746		
EVENNESS - J		0.6280		0.5978		

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL
 8/24/76

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
CNICARIA				
ACTINIAFIA (SEA ANEMONES)				
UNIDENTIFIED SP.	3	0.248	1	0.187
PLATYHELMINTHES				
TURBELLARIA (FLATWORMS)				
UNIDENTIFIED SP.	6	0.496	2	0.375
NEMERTINFA (RIBBON WORMS)				
UNIDENTIFIED SP.	25	2.068	9	1.685
NEMATODA (FECUND WORMS)				
UNIDENTIFIED SP.	16	1.323	1	0.187
BRACHIOPODA (LAMP SHELLS)				
<u>GLCTIDIUM PYRAMICATA</u>	0	0.0	1	0.187
MOLLUSCA (SHELLFISH)				
GASTROPODA (SNAILS)				
<u>ACTECCINA CANDEI</u>	3	0.248	0	0.0
<u>NATICA PISILLA</u>	1	0.083	0	0.0
<u>OLIVELLA BULLULA</u>	1	0.083	0	0.0
PELECYPODA (CLAMS)				
<u>ANADARA FLORIDANA</u>	1	0.083	0	0.0
<u>CARDICOMYA COSTELLATA</u>	0	0.0	1	0.187
<u>ERVILIA CONCENTRICA</u>	42	3.474	0	0.0
<u>LEPTON SP.</u>	1	0.083	4	0.749
<u>LUCINA MULTILINEATA</u>	9	0.744	1	0.187
<u>PAPYRIDEA SOLENIFORMIS</u>	2	0.165	0	0.0
<u>PERIFLUMA MARGARITACEUM</u>	1	0.083	1	0.187
<u>PITAF SIMPSONI</u>	27	2.233	0	0.0
<u>STRIGILLA MIRABILIS</u>	14	1.158	1	0.187
<u>TELLINA TAMPAENSIS</u>	2	0.165	0	0.0
<u>TELLINA TEXANA</u>	21	1.737	9	1.685
<u>TELLINA VERSICOLOR</u>	78	6.452	23	4.307
<u>VENEFIDA UNIDENTIFIED SP.</u>	6	0.496	0	0.0
ANNELIDA (SEGMENTED WORMS)				
OLIGOCHAETA				
UNIDENTIFIED SP.	17	1.406	2	0.375
POLYCHAETA				
<u>APCPRICNCSFIC PYGMAEA</u>	1	0.083	0	0.0
<u>ARENICILLA CRISTATA</u>	1	0.083	0	0.0
<u>ARMANDIA MACULATA</u>	9	0.744	9	1.685
<u>AXIOTHELLA MUCOSA</u>	2	0.165	0	0.0
<u>BRANIA WELLFLEETENSIS</u>	7	0.579	0	0.0
<u>CERATONEEREIS IRRITABILIS</u>	6	0.496	7	1.311
<u>CHONE SP.</u>	9	0.744	0	0.0
<u>DIOPATRA CUPREA</u>	1	0.083	2	0.375
<u>ETECNE LACTEA</u>	7	0.579	4	0.749
<u>EULALIA SANGUINEA</u>	1	0.083	1	0.187
<u>GLYCERA AMERICANA</u>	4	0.331	1	0.562
<u>GLYCERA DIBRANCHIATA</u>	3	0.248	1	0.187
<u>GLYCERA SP.</u>	3	0.248	2	0.375
<u>GLYCINDE SOLITARIA</u>	0	0.0	1	0.187
<u>GOONIACA LITTOREA</u>	7	0.579	1	0.187
<u>GYPTIS VITTATA</u>	1	0.083	0	0.0
<u>HAPLOCYCLOPODOS FOLIOSUS</u>	1	0.083	0	0.0
<u>ISOLITA PULCHELLA</u>	1	0.083	0	0.0
<u>LUMBERFINGERIS CRUZENSIS</u>	476	39.371	170	31.835

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL

8/24/76
(CONTINUED)

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
<u>MALACCECUS INDICUS</u>	0	0.0	1	0.187
<u>MESOCOETAOPTERUS SAGITTARIUS</u>	11	0.910	13	2.434
<u>NEPHYS PICTA</u>	12	0.993	1	0.187
<u>NOTCMASTUS LATERICEUS</u>	2	0.165	0	0.0
<u>ONUFHIS EREMITA CULATUM</u>	34	2.812	3	0.562
<u>ONUFHIS NEBULOSA</u>	2	0.165	2	0.375
<u>OWENIA FUSIFORMIS</u>	4	0.331	0	0.0
<u>PARANAITES SPECIOSA</u>	3	0.248	1	0.187
<u>PARACNIDES LYRA</u>	2	0.165	0	0.0
<u>PARACNIS FULGENS</u>	2	0.165	1	0.187
<u>PARAPRIONOSPIG PITTINATA</u>	1	0.083	2	0.375
<u>PHYLLODOCE ARENAE</u>	4	0.331	6	1.124
<u>POLYDORA TETRABRANCHIA</u>	1	0.083	0	0.0
<u>PRIONOSPIG CRISTATA</u>	101	8.354	114	21.348
<u>RULLIEREIS MEXICANA</u>	15	1.241	1	0.187
<u>SCOLOPLOS ARMIGER</u>	39	3.226	21	3.933
<u>SCOLOPLOS RUBRA</u>	0	0.0	1	0.187
<u>SIGALION ARENTICOLA</u>	1	0.083	0	0.0
<u>SIGAMERA BASSI</u>	2	0.165	0	0.0
<u>SPIG PETTIBONEAE</u>	12	0.993	19	3.558
<u>SPIROCHAETOPTERUS OCULATUS</u>	2	0.165	0	0.0
<u>SPIROPLANES BOMBYX</u>	5	0.414	1	0.187

ARTHROPODA (CRUSTACEANS)

AMPHIPODA

<u>ACANTHOHAUSTORIUS SP.</u>	0	0.0	1	0.187
<u>AMPELISCA AEDITA</u>	1	0.083	1	0.187
<u>AMPELISCA VERRILLI</u>	31	2.564	27	5.056
<u>LISTRIELLA SP.</u>	1	0.083	0	0.0
<u>MONOCULODES SP.</u>	1	0.083	0	0.0
<u>PROTOHAUSTORIUS SP.</u>	4	0.331	1	0.187
<u>PSEUDOHALSTORIUS SP.</u>	1	0.083	1	0.187
<u>PSEUDOPLATYISCHNOPUS SP.</u>	8	0.662	31	5.805
<u>SYNCHELIDILUM SP.</u>	4	0.331	1	0.187

ANOMURA

<u>ALBREA PARETII</u>	1	0.083	1	0.187
<u>DETROCHIRUS DIOGENES</u>	0	0.0	1	0.187
<u>PETROLISTHES GALATHINUS</u>	0	0.0	1	0.187

BRACHYURA

<u>CALLINECTES SP.</u>	2	0.165	0	0.0
<u>HEPATUS EPHELITICUS</u>	1	0.083	0	0.0
<u>PINNIXIA RETINENS</u>	0	0.0	1	0.187

CARIDEA

<u>OGYRIDES LIMICOLA</u>	1	0.083	0	0.0
<u>CUMACEA</u>				

<u>CYCLAPSIS SP.</u>	10	0.827	1	0.187
<u>CYCLAFSIS VARIANS</u>	3	0.248	2	0.375
<u>CYXYUFSTYLIS SMITHI</u>	16	1.323	3	0.562

ISOPODA

<u>EDOIEA MONTOSA</u>	3	0.248	0	0.0
<u>LEPTOSTRACA</u>				

<u>NEBALIA SP.</u>	2	0.165	1	0.187
<u>OSTRACODA</u>				

<u>UNIDENTIFIED SP.</u>	13	1.075	1	0.187
<u>PENAEIDAE</u>				

<u>PENAEUS CUCARARUM</u>	0	0.0	1	0.187
<u>STOMATOPODA</u>				

<u>ACANTHOCUILLA BIMINIENSIS</u>	1	0.083	0	0.0
<u>ECHINODERMATA</u>				

ASTEROIDEA (STARFISHES)

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL
 8/24/76
 (CONTINUED)

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
<u>ASTROPECTEN ARTICULATUS</u>	1	0.083	0	0.0
ECHINOIDEA (SAND DOLLARS; URCHINS)				
<u>MELLITA QUINQUIESPERFORATA</u>	6	0.496	0	0.0
HOLOTHUROIDEA (SEA CUCUMBERS)				
<u>LEPTOSYNAPTA SP.</u>	5	0.744	1	0.187
OPHIURIDEA (BRITTLE STARS)				
<u>OPHICPHRAGMUS WURDEMANI</u>	2	0.165	0	0.0
UNIDENTIFIED SP.	5	0.414	1	0.187
HEMICHRICATA				
ENTEROPNEUSTA (ACRION WORMS)				
UNIDENTIFIED SP.	2	0.165	0	0.0
CEPHALOCHORDATA (LANCELETS)				
<u>BRANCHIOSOMA FLORIDAE</u>	5	0.744	11	2.060
VERTEBRATA				
PISCES (FISHES)				
<u>LEPODIDIUM GRAELSSI</u>	0	0.0	1	0.187
TOTALS	1209		534	
NO. SPECIES		84		60
NO. IND. FOR M2		4836		2136
S-W INDEX - H'(LN)		2.8449		2.5827
EVENNESS - J		C.6421		0.6308

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL
9/1/76

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
CNIDARIA				
ACTINIANARIA (SEA ANEMONES)				
UNIDENTIFIED SP.	1	0.130	0	0.0
PLATYHELMINTHES				
TURBELLARIA (FLATWORMS)				
UNIDENTIFIED SP.	5	0.649	1	0.248
NEMERTINEA (RIBBON WORMS)				
UNIDENTIFIED SP.	20	2.597	7	1.737
NEMATODA (ROUNDWORMS)				
UNIDENTIFIED SP.	10	1.299	1	0.248
MOLLUSCA (SHELLFISH)				
GASTROPODA (SNAILS)				
NATICA PLISILLA	5	0.649	0	0.0
OLIVELLA BULLULA	1	0.130	0	0.0
TEREERA DISLOCATA	2	0.260	0	0.0
TURBONILLA CONFRADI	1	0.130	0	0.0
PELICYPODA (CLAMS)				
ERVILIA CONCENTRICA	30	3.896	1	0.248
LEPTICA SP.	0	0.0	4	0.993
LUCINA MULTILINEATA	11	1.429	0	0.0
LYCNSIA H. FLORICANA	3	0.390	0	0.0
PAPYFIDEA SOLENIFORMIS	1	0.130	0	0.0
PITAR SIMPSONI	1	0.130	0	0.0
SEMELE PROFICUA	4	0.519	3	0.744
STRIGILLA MIRABILIS	17	2.208	0	0.0
TELLINA IRIS	0	0.0	1	0.248
TELLINA VERSICOLOR	58	7.532	32	7.940
ANNELIDA (SEGMENTED WORMS)				
OLIGOCHAETA				
UNIDENTIFIED SP.	16	2.078	2	0.496
POLYCHAETA				
APERTIFICNSPIG. PYGMAEA	1	0.130	0	0.0
ARICIDEA WASSI	1	0.130	0	0.0
ARMANDIA MACULATA	2	0.260	0	0.0
AXIOTHELLA MUCOSA	2	0.260	0	0.0
BRANCHICASYCHIS AMERICANA	1	0.130	0	0.0
BRANIA WELLFLEETENSIS	3	0.390	1	0.248
CERATONEUREIS IRRITABILIS	16	2.078	14	3.474
CHAETOCENE GAYHEADIA	1	0.130	0	0.0
CHICHE SP.	6	0.779	3	0.744
CISTERIDES GULDII	1	0.130	0	0.0
ETECNE LACTEA	1	0.130	3	0.744
GLYCERA CIBRANCHIATA	3	0.390	1	0.248
GLYCERA SP.	2	0.260	0	0.0
GONIATIA LITTOREA	3	0.390	2	0.496
HAPLOCYCLOPOS FRAGILIS	4	0.519	0	0.0
LUMEFINERIS CRUZENSIS	283	36.753	207	51.365
MESOCIAETOPTERUS SAGITTARIUS	8	1.039	7	1.737
NEANTIES ACUMINATA	2	0.260	0	0.0
NEANTIES SUCCINEA	3	0.390	0	0.0
NEPHTYS EUCERA	1	0.130	1	0.248
NEPHTYS PICTA	17	2.208	2	0.744
NUPHIS EREMITA OCULATA	17	2.208	3	0.744
OWENIA FUSIFORMIS	1	0.130	0	0.0
PARACNIDES LYRA	1	0.130	1	0.248

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL

9/1/76
(CONTINUED)

SPECIES	NO. OF TOTAL	IND. (C.) PERCENT	NO. OF IND. (E.) TOTAL PERCENT	
			IND. (C.)	IND. (E.)
<u>PARAPFIONCSPIC PINNATA</u>	2	0.260	3	0.744
<u>PISTA PALMATA</u>	0	0.0	1	0.248
<u>PGECILLOCHAETUS JOHNSONI</u>	0	0.0	2	0.496
<u>PRICNCSPID CRISTATA</u>	32	4.156	37	9.181
<u>RULLIEFINEREIS MEXICANA</u>	21	2.727	9	2.233
<u>SCOL ELEPIS TEXANA</u>	1	0.130	0	0.0
<u>SCCOLCFCS ARMIGER</u>	50	6.494	17	4.218
<u>SIGAMERA TENTACULATA</u>	0	0.0	3	0.744
<u>SPIC PETTISONAE</u>	17	2.208	1	0.248
<u>SPIOCHAETOPTERUS OCULATUS</u>	3	0.390	0	0.0
<u>SPICFANES BOMBYX</u>	6	0.779	2	0.496
 <u>SIPUNCULICA (PEANUT WORMS)</u>				
<u>GOLFINGIA TRICHOCEPHALA</u>	1	0.130	0	0.0
 <u>ARTHROPODA (CRUSTACEANS)</u>				
<u>AMPHIPODA</u>				
<u>ACANTHCHAUSTORIUS SP.</u>	9	1.169	0	0.0
<u>AMPELISCA AEDITA</u>	1	0.130	0	0.0
<u>AMPELISCA VERRILLI</u>	13	1.688	7	1.737
<u>COROPHIUM SP.</u>	1	0.130	0	0.0
<u>MONOCULODES SP.</u>	0	0.0	4	0.993
<u>PROTOCHAUSTORIUS SP.</u>	3	0.390	0	0.0
<u>PSEUCOCHAUSTORIUS SP.</u>	4	0.519	0	0.0
<u>PSEUCOPLATYISCHNOPLS SP.</u>	2	0.260	3	0.744
<u>SYNCHELIDIUM SP.</u>	2	0.260	0	0.0
<u>ANOMURA</u>				
<u>ALBUNEA PARETII</u>	1	0.130	0	0.0
<u>BRACHYURA</u>				
<u>CALLINECTES SP.</u>	2	0.260	0	0.0
<u>PINNIXIA RETINENS</u>	1	0.130	0	0.0
<u>CALLIANASSIDAE</u>				
<u>CALLIANASSA JAMAICENSE</u>	2	0.260	0	0.0
<u>CARIDEA</u>				
<u>LATREUTES PARVULUS</u>	1	0.130	0	0.0
<u>PROCESSA VICINA</u>	1	0.130	0	0.0
<u>CLIMACEA</u>				
<u>CYCLAPYSIS VARIANS</u>	1	0.130	2	0.496
<u>DXYUROSTYLIS SMITHI</u>	2	0.260	4	0.993
<u>MYSTIDACEA</u>				
<u>UNIDENTIFIED SP.</u>	0	0.0	4	0.993
<u>OSTRACCCA</u>				
<u>UNIDENTIFIED SP.</u>	6	0.779	4	0.993
<u>STOMATOPODA</u>				
<u>ACANTHOSQUILLA BIMINIENSIS</u>	2	0.260	0	0.0
 <u>ECHINODERMATA</u>				
<u>ASTEROIDEA (STARFISHES)</u>				
<u>ASTROPECTEN ARTICULATUS</u>	1	0.130	0	0.0
<u>ECHINOIDEA (SAND DOLLARS; URCHINS)</u>				
<u>MELLITA QUINQUEPERFORATA</u>	3	0.390	0	0.0
<u>HOLOTHUROIDEA (SEA CUCUMBERS)</u>				
<u>LEFTCSYNAFTA SP.</u>	1	0.130	2	0.496
<u>OPHIURCIDEA (BRITTLE STARS)</u>				
<u>OPHICPHRAGMUS WURDEMANI</u>	4	0.519	0	0.0
 <u>HEMICORDATA</u>				
<u>ENTEROPNEUSTA (ACORN WORMS)</u>				
<u>UNIDENTIFIED SP.</u>	4	0.519	0	0.0
 <u>CEPHALOCHORDATA (LANCLETS)</u>				

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL

9/1/76
(CONTINUED)

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
<u>BRANCHIOSTOMA FLORIDAEE</u>	4	0.519	0	0.0
TOTALS	770		403	
NO. SPECIES	74		38	
NO. IND. PER M2	3080		1612	
S-W INDEX - H' (LN)	2.8922		2.1365	
EVENNESS - J	0.6720		0.5873	

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL
 9/8/76

SPECIES	NO. OF IND.	% OF TOTAL		NO. OF IND.		% OF TOTAL	
		(C.)	PERCENT	(E.)	PERCENT		
Cnidaria							
ACTINIARIA (SEA ANEMONES)							
UNIDENTIFIED SP.	4	0.708		0	0.0		
Platyhelminthes							
TURBELLARIA (FLATWORMS)							
UNIDENTIFIED SP.	1	0.177		0	0.0		
Nemertinea (RIBBON WORMS)							
UNIDENTIFIED SP.	23	4.071		6	1.786		
Nematoda (Roundworms)							
UNIDENTIFIED SP.	4	0.708		0	0.0		
Mollusca (Shellfish)							
GASTROPODA (SNAILS)							
ACTECCINA CANDEI	2	0.354		0	0.0		
CYLICHNELLA BIDENTATA	1	0.177		1	0.298		
NATICA PLSILLA	2	0.354		1	0.298		
OLIVELLA BULLULA	1	0.177		0	0.0		
PELECYPODA (CLAMS)							
ERVILIA CONCENTRICA	12	2.124		1	0.298		
LEPTIN SP.	1	0.177		2	0.595		
LUCINA MULTILINEATA	17	3.009		0	0.0		
PAPYRIDEA SOLENIFERMIS	1	0.177		0	0.0		
PERIPLEMMA MARGARITACEUM	6	1.062		0	0.0		
PITAR SIMPSONI	1	0.177		0	0.0		
SEMELE PROFICUA	2	0.354		1	0.298		
STRIGILLA MIRABILIS	3	0.531		0	0.0		
TELLINA IRIS	0	0.0		1	0.298		
TELLINA TEXANA	0	0.0		9	2.679		
TELLINA VERSICOLOR	37	6.549		15	4.464		
VERETIDAE UNIDENTIFIED SP.	3	0.531		1	0.298		
annelida (segmented worms)							
OLIGOCHAETA							
UNIDENTIFIED SP.	10	1.770		1	0.298		
CLYCHAETA							
APOPHICACSPIC PYGMAEA	1	0.177		4	1.190		
ARICIDEA SP.	1	0.177		0	0.0		
ARMANDIA AGILIS	0	0.0		2	0.595		
ARMANDIA MACULATA	3	0.531		1	0.298		
AXICHELLEA MUCCSA	1	0.177		0	0.0		
BRANIA WELLFLEETENSIS	1	0.177		0	0.0		
CAPITELLIDES JONESI	1	0.177		0	0.0		
CERATINEEREIS IRRITABILIS	18	3.186		11	3.274		
CERATINEEREIS MIRABILIS	1	0.177		2	0.595		
CHAETOCENE GAYHEADIA	3	0.531		0	0.0		
CHCNE SP.	5	0.885		0	0.0		
CISTENIDES GCULDII	4	0.708		0	0.0		
ETECNE LACTEA	1	0.177		0	0.0		
FULALIA SANGUINEA	1	0.177		0	0.0		
GLYCERA CIERANCHIATA	5	0.885		1	0.298		
GNIACA LITTOREA	15	2.655		1	0.298		
LAPLCSCCLOPLCS ROBUSTUS	1	0.177		0	0.0		
MARMCTICE LUNULATA	1	0.177		0	0.0		
ISOLEA PULCHELLA	2	0.354		0	0.0		
LUMEFINERIS CRUZENSIS	150	26.549		112	32.333		
LUMEFINERIS TETRAURA	3	0.531		0	0.0		
MAGELCNA SP.	3	0.531		0	0.0		

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL
 9/8/76
 (CONTINUED)

SPECIES	NO. OF TOTAL	IND. (C.) PERCENT	NO. OF IND. (E.) TOTAL PERCENT	
			IND. (C.) TOTAL	IND. (E.) TOTAL PERCENT
<u>MEDICMASTUS CALIFORNIENSIS</u>	3	0.531	0	0.0
<u>MESOCYAETOPTERUS SAGITTARIUS</u>	4	0.708	1	0.298
<u>NEANTITES SUCCINEA</u>	0	0.0	2	0.595
<u>NEPHTYS PICTA</u>	15	2.655	1	0.298
<u>NOTOMASTUS HEMIPODUS</u>	0	0.0	1	0.298
<u>NOTOMASTUS LATERICEUS</u>	3	0.531	0	0.0
<u>ONUPFIS EREMITA OCULATA</u>	28	4.956	14	4.167
<u>ONUPFIS NEBULOSA</u>	1	0.177	0	0.0
<u>OWENIA FUSIFORMIS</u>	2	0.354	0	0.0
<u>PARANAIITES SPECIOSA</u>	1	0.177	1	0.298
<u>PARACNIDES LYRA</u>	9	1.593	0	0.0
<u>PARACNIS FULGENS</u>	1	0.177	0	0.0
<u>PARAFRIONOSPIRO PINNATA</u>	4	0.708	9	2.679
<u>PHYLLODOCE ARENAE</u>	10	1.770	8	2.381
<u>POECILOCHAETUS JCHNSCHI</u>	0	0.0	2	0.595
<u>PRIONOSPIRO CRISTATA</u>	17	3.009	26	7.738
<u>RULLIERINEREIS MEXICANA</u>	19	3.363	16	4.762
<u>SCOPLOPLCS ARMIGER</u>	22	3.894	33	9.821
<u>SIGALICK ARENICOLA</u>	2	0.354	0	0.0
<u>SIGAMEFA BASSI</u>	1	0.177	0	0.0
<u>SIGAMBRA TENTACULATA</u>	2	0.354	0	0.0
<u>SPIC FETTIBCNEAE</u>	1	0.177	14	4.167
<u>SPICCHAETCTERUS OCULATUS</u>	0	0.0	1	0.298
<u>SPICFHANES BOMBYX</u>	8	1.416	7	2.083
 <u>SIPUNCULICA</u> (PEANUT WORMS)				
<u>GOLFINGIA TRICHOCEPHALA</u>	2	0.354	0	0.0
 ARTHROPODA (CRUSTACEANS)				
AMPHIPODA				
<u>AMPELISCA ABDITA</u>	1	0.177	1	0.298
<u>AMPELISCA VERRILLI</u>	2	0.354	4	1.190
<u>ARGISSA SP.</u>	0	0.0	1	0.298
<u>COROPHIDIUM SP.</u>	0	0.0	1	0.298
<u>NONCUCULIDES SP.</u>	2	0.354	0	0.0
<u>FARAPHOXUS SP.</u>	2	0.354	0	0.0
<u>PSEUOPLATYISCHNOPUS SP.</u>	1	0.177	1	0.298
<u>SYNCFELICUM SP.</u>	3	0.531	0	0.0
ANOMURA				
<u>ALBUNEA PARETII</u>	1	0.177	2	0.595
BRACHYURA				
<u>PINNIXIA FETINENS</u>	1	0.177	0	0.0
CARIDEA				
<u>PROCESSA HEMPHILLI</u>	3	0.531	0	0.0
<u>PROCESSA VICINA</u>	3	0.531	0	0.0
CUNACEA				
<u>CYCLAPSIS SP.</u>	6	1.062	1	0.298
<u>CYCLAPSIS VARIANS</u>	2	0.354	1	0.298
<u>CYXYLOSTYLIIS SMITHI</u>	5	0.885	4	1.190
LEPTOSTRACA				
<u>NEBALIA SP.</u>	3	0.531	1	0.298
mysidacea				
<u>UNIDENTIFIED SP.</u>	3	0.531	0	0.0
OSTRACODA				
<u>UNIDENTIFIED SP.</u>	5	0.885	1	0.298
PENAEOPHILAE				
<u>PENAEUS DULCRAFUM</u>	1	0.177	0	0.0
<u>TRACHYPENAEUS CONSTRICTUS</u>	1	0.177	2	0.595
TANAIDACEA				
<u>UNIDENTIFIED SP.</u>	1	0.177	0	0.0
 ECHINODERMATA				

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL
 5/8/76
 (CONTINUED)

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
HOLOTHIROIDEA (SEA CUCUMBERS) <u>LEPTOSYNAPTA</u> SP.	10	1.770	0	0.0
HEMICHLORDATA ENTEROPNEUSTA (ACORN WORMS) UNIDENTIFIED SP.	1	0.177	0	0.0
CEPHALOCHLORDATA (LANCELETS) <u>BRANCHIOSTOMA FLORIDAEE</u>	1	0.177	7	2.083
TOTALS	565		336	
NO. SPECIES		83		47
NO. IND. PER M2		2260		1344
S-W INDEX - H ¹ (LN)		3.3627		2.7387
EVENNESS - J		0.7610		0.7113

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL
9/21/76

SPECIES	NO. OF IND.	(C.)		NO. OF IND. (E.)	
		TOTAL	PERCENT	TOTAL	PERCENT
CNIDARIA					
ACTINIARIA (SEA ANEMONES)					
UNIDENTIFIED SP.	2	0.256		0	0.0
PLATYHELMINTHES					
TURBELLARIA (FLATWORMS)					
UNIDENTIFIED SP.	1	0.128		1	0.433
NEMERTINEA (RIBBON WORMS)					
UNIDENTIFIED SP.	21	2.685		7	3.030
NEMATODA (ROUNDWORMS)					
UNIDENTIFIED SP.	9	1.151		0	0.0
PHORONIDA (PHORONIDS)					
PHORONIS ARCHITECTA	2	0.256		0	0.0
MOLLUSCA (SHELLFISH)					
GASTROPODA (SNAILS)					
CYLICHNELLA BIDENTATA	0	0.0		1	0.433
RATICA FUSILLA	3	0.384		0	0.0
CLIVELLA BULLULA	3	0.384		1	0.433
PELECYPODA (CLAMS)					
ANADARA FLORIDANA	1	0.128		0	0.0
ERVILIA CONCENTRICA	3	0.384		0	0.0
LAEVICARDIUM PICTUM	1	0.128		0	0.0
LUCINA MULTILINATA	3	0.384		3	1.299
STRIGILLA MIRABILIS	5	0.639		0	0.0
TELLINA IRIS	4	0.512		3	1.299
TELLINA TEXANA	8	1.023		1	0.433
TELLINA VERSICOLOR	31	3.964		16	6.926
ANNELIDA (SEGMENTED WORMS)					
CLIGGCHAETA					
UNIDENTIFIED SP.	15	1.918		0	0.0
PCLYCHAETA					
AMPHARETE ACUTIFRONS	1	0.128		0	0.0
APOPRIONOSPI PYGMAEA	0	0.0		3	1.299
ARICIDEA FRAGILIS	1	0.128		0	0.0
ARICICEA SP.	2	0.256		0	0.0
ARMANDIA AGILIS	2	0.256		0	0.0
ARMANDIA MACULATA	3	0.384		1	0.433
AXIOTHELLA MUCOSA	0	0.128		0	0.0
BRANIA WELLFLEETENSIS	8	1.023		0	0.0
CAPIJELLA CAPITATA	0	0.0		8	3.463
CAULLERIELLA SP.	2	0.256		0	0.0
CERATOCNEREIS IRRITABILIS	17	2.174		7	3.030
CERATOCNEREIS MIRABILIS	2	0.256		0	0.0
CHAETOCNEM GAYHEACIA	1	0.128		0	0.0
CHONE SP.	17	2.174		1	0.433
CISTERNIDES GCULDII	1	0.128		0	0.0
DICPATRA CUPREA	1	0.128		1	0.433
ETECNE LACTEA	3	0.384		0	0.0
GLYCERA AMERICANA	4	0.512		0	0.0
GLYCERA DIBRANCHIATA	2	0.256		1	0.433
GLYCIINDE SOLITARIA	1	0.128		0	0.0
GONIADA LITOREA	3	0.384		0	0.0
GRUUEULEPIS MEXICANA	1	0.128		0	0.0
GYPTIS VITTATA	1	0.128		0	0.0
HAPLOSCLOPS FOLIOSUS	2	0.256		0	0.0

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL
 9/21/76
 (CONTINUED)

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
<u>HAPLOSCYLICLOSS FRAGILIS</u>	6	0.767	0	0.0
<u>HAPLOSCYLICLOSS ROBUSTUS</u>	4	0.512	0	0.0
<u>HETEROMASTUS FILIFORMIS</u>	1	0.128	1	0.433
<u>LUMBFINERIS CFUZENSIS</u>	315	40.281	70	30.303
<u>LUMBFINERIS TETRAURA</u>	9	1.151	0	0.0
<u>MAGELLANA LCNIGICOFNIS</u>	0	0.0	1	0.433
<u>MEDILIMASTUS CALIFORNIENSIS</u>	2	0.256	0	0.0
<u>MESOCHAETOPTERUS SAGITTARIUS</u>	2	0.256	1	0.433
<u>NEANTHES SUCCINEA</u>	0	0.0	1	0.433
<u>NEPHIYS BUCERA</u>	1	0.128	0	0.0
<u>NEPHIYS FICTA</u>	7	0.895	1	0.433
<u>NOTCMASTUS HEMIPODUS</u>	1	0.128	0	0.0
<u>NOTCMASTUS LATERICEUS</u>	1	0.128	0	0.0
<u>ONUPHIS EREMITA CCULATA</u>	26	3.325	7	3.030
<u>ONUPHIS NEBULOSA</u>	1	0.128	0	0.0
<u>OWENIA FUSIFORMIS</u>	3	0.384	0	0.0
<u>PARANAITES SPECIOSA</u>	1	0.128	0	0.0
<u>PARACNIDES LYRA</u>	1	0.128	1	0.433
<u>PARATNIS FULGENS</u>	3	0.384	0	0.0
<u>PARACNIS SP.</u>	3	0.384	0	0.0
<u>PARAPRIONOSPIO PINNATA</u>	0	0.0	2	0.866
<u>PHYLLODOCE ARENAE</u>	7	0.895	100	4.329
<u>PRIONOSPIO CRISTATA</u>	25	3.197	12	5.195
<u>RULLIERINEREIS MEXICANA</u>	25	3.197	7	3.030
<u>SCOLELEPIS TEXANA</u>	1	0.128	0	0.0
<u>SCOLCPLCS ARMIGER</u>	40	5.115	7	3.030
<u>SIGAMBRA BASSI</u>	3	0.384	0	0.0
<u>SIGAMBRA TENTACULATA</u>	0	0.0	5	2.165
<u>SPIO PETTIBONEAE</u>	9	1.151	4	1.732
<u>SPIOPHANES BCBMYX</u>	5	0.639	4	1.732
<u>THEANELAIS BOA</u>	0	0.0	1	0.433
<u>SIREPPOSYLLIS ARENAE</u>	1	0.128	0	0.0
 <u>SIPUNCULICIA (PEANUT WORMS)</u>				
<u>GOLFINGIA TRICHOCEPHALA</u>	2	0.256	0	0.0
 <u>ARTHROPODA (CRUSTACEANS)</u>				
<u>AMPHIPODA</u>				
<u>ACANTHOHALSTORIUS SP.</u>	10	1.279	0	0.0
<u>AMPELISCA ABDITA</u>	4	0.512	0	0.0
<u>AMPELISCA VERRILLI</u>	19	2.430	6	2.597
<u>ARGIESA SP.</u>	0	0.0	1	0.433
<u>CCRCHIUM SP.</u>	3	0.384	0	0.0
<u>LISTFIELLA SP.</u>	1	0.128	1	0.433
<u>MONOCULOCES SP.</u>	4	0.512	0	0.0
<u>PROTOFAUSTORIUS SP.</u>	1	0.128	0	0.0
<u>PSEUDOFHAUSTORIUS SP.</u>	1	0.128	0	0.0
<u>PSEUCOPLATYISCHNOPOUS SP.</u>	7	0.895	7	3.030
<u>SYNCFELIDIUM SP.</u>	2	0.256	0	0.0
<u>ANOMURA</u>				
<u>ALBUNEA PARETII</u>	1	0.128	0	0.0
<u>CARTDEA</u>				
<u>PROCESSA FEMPHILLI</u>	2	0.256	1	0.433
<u>CUMACEA</u>				
<u>CYCLAFSIS SP.</u>	2	0.256	0	0.0
<u>CYCLAFSIS VARIANS</u>	0	0.0	2	0.866
<u>EXYUFESTYLIS SMITHI</u>	3	0.384	1	0.433
<u>LEPTOSTRACA</u>				
<u>NEBALIA SP.</u>	1	0.128	1	0.433
<u>OSTRACCIA</u>				
<u>UNIDENTIFIED SP.</u>	7	0.895	14	6.061

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL
 5/21/76
 (CONTINUED)

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
PENAIDEA				
<u>SICYCNIA BREVIROSTRIS</u>	1	0.128	2	0.866
<u>TRACHYPENAEUS CONSTRICTUS</u>	4	0.512	1	0.433
ECHINODERMATA				
ECHINOIDEA (SAND DOLLARS; URCHINS)				
<u>MELLITA GUINGUIESPERFORATA</u>	4	0.512	0	0.0
HOLOTHURIDAE (SEA CUCUMBERS)				
<u>LEPTOCYANAPTA SP.</u>	5	0.639	3	1.299
OPHTURIDAE (BRITTLE STARS)				
UNIDENTIFIED SP.	1	0.128	0	0.0
HEMICHORDATA				
ENTEROPNEUSTA (ACORN WORMS)				
UNIDENTIFIED SP.	1	0.128	0	0.0
CEPHALOCHORDATA (LANCELETS)				
<u>BRANCHIOSTOMA FLORIDAE</u>	5	0.639	1	0.433
TOTALS				
NO. SPECIES	782		231	
NO. IND. PER M2		89		45
S-W INDEX - H' (LN)		3128		924
EVENNESS - J		2.9755		2.9440
		0.6629		0.7734

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL
10/4/76

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
PLATYHELMINTHES				
TURBELLARIA (FLATWORMS)				
UNIDENTIFIED SP.	0	0.0	1	0.164
NEMERTINEA (RIBBON WORMS)				
UNIDENTIFIED SP.	27	3.466	17	2.787
NEMATODA (ROUNDWORMS)				
UNIDENTIFIED SP.	4	0.513	1	0.164
PHORONIDA (PHORONIDS)				
<u>PHORONIS ARCHITECTA</u>	1	0.128	0	0.0
MOLLUSCA (SHELLFISH)				
GASTROPODA (SNAILS)				
<u>CYLICHINELLA BICENTATA</u>	0	0.0	1	0.164
<u>OLIVA SAYANA</u>	1	0.128	0	0.0
<u>OLIVELLA FUSILLA</u>	1	0.128	0	0.0
<u>POLYNICES DUPLICATUS</u>	1	0.128	0	0.0
PELECYPODA (CLAMS)				
<u>ANADARA FLORIDANA</u>	3	0.385	0	0.0
<u>ERVILIA CONCENTRICA</u>	3	0.385	1	0.164
<u>LUCINA MULTILINEATA</u>	19	2.439	29	4.754
<u>PERIPLOMA MARGARITACEUM</u>	8	1.027	4	0.656
<u>PITAR SIMPSONI</u>	1	0.128	0	0.0
<u>STRIGILLA MIRABILIS</u>	1	0.128	0	0.0
<u>TELLINA AEQUISTRIGATA</u>	0	0.0	1	0.164
<u>TELLINA IRIS</u>	3	0.385	2	0.328
<u>TELLINA TEXANA</u>	5	0.642	4	0.656
<u>TELLINA VERSICOLOR</u>	33	4.236	19	3.115
VENERIDAE UNIDENTIFIED SP.	1	0.128	1	0.164
ANNELIDA (SEGMENTED WORMS)				
CLIGOCHETA				
UNIDENTIFIED SP.	23	2.953	21	3.443
PCLYCHETA				
<u>AGLACPHAMUS VERRILLI</u>	1	0.128	0	0.0
<u>AMPHARETE ACUTIFRONS</u>	1	0.128	1	0.164
<u>APOPROTONGSPIO PYGMAEA</u>	1	0.128	0	0.0
<u>ARICIDEA FRAGILIS</u>	1	0.128	1	0.164
<u>ARICIDEA SP.</u>	1	0.128	0	0.0
<u>ARMANDIA AGILIS</u>	0	0.0	1	0.164
<u>ARMANDIA MACULATA</u>	0	0.0	3	0.492
<u>ASYCHIS CAROLINAE</u>	2	0.257	19	3.115
<u>BRANIA WELLFLEETENSIS</u>	2	0.257	3	0.492
<u>CAPITELLA CAPITATA</u>	0	0.0	2	0.328
<u>CAULLERIELLA SP.</u>	0	0.0	1	0.164
<u>CERATONEREIS IRRITABILIS</u>	27	3.466	44	7.213
<u>CERATONEREIS MIRABILIS</u>	0	0.0	2	0.328
<u>CHAEIZONE GAYHEADIA</u>	0	0.0	2	0.328
<u>CHAEIZONE SETOSA</u>	1	0.128	0	0.0
<u>CHONE SP.</u>	6	0.770	3	0.492
<u>CISTERNIDES GOULDII</u>	4	0.513	2	0.328
<u>DASYBRANCHIIS LUMBRICOIDES</u>	0	0.0	1	0.164
<u>DIOPATRA CUPREA</u>	1	0.128	1	0.164
<u>EIEONE LACTEA</u>	1	0.128	4	0.656
<u>GLYCERA AMERICANA</u>	1	0.128	4	0.656
<u>GLYCERA DIBRANCHIATA</u>	5	0.642	2	0.328
<u>GLYCERA SP.</u>	0	0.0	1	0.164
<u>GONIACA LITIGREA</u>	15	1.926	1	0.164

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL

10/4/76
(CONTINUED)

SPECIES	NO. TOTAL	CF PERCENT	IND. (C.)		NO. TOTAL	CF PERCENT	INF. (E.)
			TOTAL	PERCENT			
<i>GYPSIS VITIATA</i>	2	0.257	2	0.328			
<i>HAPLOSCYLICLIC FOLIOSUS</i>	2	0.257	5	0.820			
<i>HAPLOSCYLICLIC FRAGILIS</i>	10	1.284	1	0.164			
<i>HAPLOSCYLICLIC ROBUSTUS</i>	1	0.128	1	0.164			
<i>HARMOTHICE LUNULATA</i>	1	0.128	0	0.0			
<i>HETEROMASTUS FILIFORMIS</i>	0	0.0	4	0.656			
<i>ISCHIACA PULCHELLA</i>	1	0.128	0	0.0			
<i>LUMBFINEFIS CRUZENSIS</i>	196	25.160	48	7.869			
<i>LUMBFINERIS TETRAURA</i>	46	5.905	27	4.426			
<i>MACROCLYME ZONALIS</i>	2	0.257	1	0.164			
<i>MAGELINA SP.</i>	1	0.128	0	0.0			
<i>MEDICMASTUS CALIFORNENSIS</i>	1	0.128	3	0.492			
<i>MEGALCMMA BIOCULATUM</i>	0	0.0	4	0.656			
<i>MESOCHAETOPTERUS SAGITTARIUS</i>	1	0.128	1	0.164			
<i>MICRASPIS PIGMENTATA</i>	1	0.128	0	0.0			
<i>NYRICCHELE SP.</i>	0	0.0	1	0.164			
<i>NEANTES SUCCINEA</i>	1	0.128	0	0.0			
<i>NEPHTYS PICTA</i>	11	1.412	2	0.328			
<i>NOTOMASTUS HEMIPODUS</i>	5	0.642	3	0.492			
<i>NOTOMASTUS LATERICEUS</i>	1	0.128	0	0.0			
<i>ONUPHIS EREMITA OCULATA</i>	36	4.621	22	3.607			
<i>ONUPHIS NEBULOSA</i>	1	0.128	7	0.0			
<i>OWENIA FUSIFORMIS</i>	1	0.128	7	1.148			
<i>PARACONIDES LYRA</i>	15	1.926	7	1.148			
<i>PARACNIS FULGENS</i>	6	0.770	1	0.164			
<i>PARACNIS SP.</i>	4	0.513	1	0.164			
<i>PARAFFICNIS PINNATA</i>	4	0.513	20	3.279			
<i>PHYLLODCE ARENAE</i>	2	0.257	9	1.475			
<i>POLYDICTYNES LUPINA</i>	1	0.128	0	0.0			
<i>PRIONASPIS CRISTATA</i>	55	7.060	51	8.361			
<i>RULLIERINE REIS MEXICANA</i>	29	3.723	17	2.787			
<i>SCYLICLIC FARMIGER</i>	47	6.033	11	1.803			
<i>SCYLICLIC FUERA</i>	1	0.128	2	0.328			
<i>SIGALIĆN ARENICOLA</i>	1	0.128	0	0.0			
<i>SIGAMERIS TENTACULATA</i>	0	0.0	21	3.443			
<i>SPIROPHANES PETTIBONEAE</i>	3	0.385	3	0.492			
<i>SPIROPHANES BOMBYX</i>	13	1.669	11	1.803			
<i>STHENELAIS BOA</i>	0	0.0	1	0.164			
 <i>SIPUNCULIDA (PEANUT WORMS)</i>							
<i>GOLFINGIA TRICHOCEPHALA</i>	3	0.385	6	0.984			
 <i>ARTHROPODA (CRUSTACEANS)</i>							
<i>AMPHIPODA</i>							
<i>AMPELISCA AEDITA</i>	5	0.642	12	1.967			
<i>AMPELISCA VERRILLI</i>	16	2.054	15	2.459			
<i>COROPHium SP.</i>	0	0.0	1	0.164			
<i>LISTFIELLA SP.</i>	0	0.0	3	0.492			
<i>MONOCULIDES SP.</i>	2	0.257	1	0.164			
<i>PARAPHOXUS SP.</i>	1	0.128	0	0.0			
<i>PSEUDODHAUSTORIUS SP.</i>	0	0.0	2	0.328			
<i>PSEUCOPLAIYI SCHNOPLIS SP.</i>	2	0.257	4	0.656			
<i>ANOMURA</i>							
<i>ALBUNEA PARETII</i>	4	0.513	12	1.967			
<i>EUCEFAMUS PRAEOLONGUS</i>	1	0.128	0	0.0			
<i>BRACHYURA</i>							
<i>CALLINECTES SAPIDUS</i>	1	0.128	0	0.0			
<i>PERSEPHONA P. AQUILONARIS</i>	1	0.128	0	0.0			
<i>PINNIXIA SAYANA</i>	0	0.0	3	0.492			
<i>CALLIANASSIDA</i>							
<i>CALLIANASSA JAMAICENSE</i>	2	0.257	1	0.164			

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL

10/4/76

(CONTINUED)

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
CARIDAE				
<u>PROCESSA HEMPHILLI</u>	2	0.257	2	0.328
CUMACEA				
<u>CYCLAPSIS SP.</u>	6	0.770	2	0.328
<u>CYCLAPSIS VARIANS</u>	0	0.0	2	0.328
<u>CYXYOSTYLIS SMITHI</u>	3	0.385	5	0.820
mysidacea				
UNIDENTIFIED SP.	2	0.257	4	0.656
DESTRACODA				
UNIDENTIFIED SP.	6	0.770	14	2.295
PENAIDEA				
<u>SICYONIA BREVIROSTRIS</u>	1	0.128	1	0.164
<u>TRACHYOPENAEUS CONSTRICTUS</u>	6	0.770	1	0.164
TANAIDACEA				
UNIDENTIFIED SP.	0	0.0	1	0.164
ECHINODEFRATA				
ASTEROIDEA (STARFISHES)				
<u>ASTROPECTEN ARTICULATUS</u>	2	0.257	3	0.492
HCLOCTHURIDEA (SEA CUCUMBERS)				
<u>LEPTOCYANPTA SP.</u>	5	0.642	26	4.262
OPHIURIDEA (BRITTLE STARS)				
<u>OPHIOPHRAGMUS WURDEMANI</u>	1	0.128	0	0.0
CEPHALOCHORDATA (LANCELETS)				
<u>BRANCHIOSTOMA FLORIDAE</u>	0	0.0	2	0.328
TOTALS				
NO. SPECIES	779	87	610	85
NO. IND. PER M ²		3116		2440
S-W INDEX - H ¹ (LN)		3.2650		3.7160
EVENNESS - J		0.7311		0.8364

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL
10/16/76

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
CNIDARIA				
ACTINIARIA (SEA ANEMONES)				
UNIDENTIFIED SP.	1	0.102	0	0.0
PLATYHELMINTHES				
TURBELLARIA (FLATWORMS)				
UNIDENTIFIED SP.	2	0.204	0	0.0
NEMERTINEA (RIBBON WORMS)				
UNIDENTIFIED SP.	15	1.534	4	1.423
NEMATODA (ROUNDWORMS)				
UNIDENTIFIED SP.	32	3.272	3	1.068
MOLLUSCA (SHELLFISH)				
GASTROPODA (SNAILS)				
OLIVA SAYANA	1	0.102	0	0.0
CLIVELLA BULLULA	0	0.0	1	0.356
TERREA DISLOCATA	3	0.307	0	0.0
PELECYPODA (CLAMS)				
ERVILLA CONCENTRICA	6	0.613	1	0.356
LUCINA MULTILINEATA	5	0.511	11	3.915
MACROCALLISTA NIMBOSA	1	0.102	0	0.0
PERIPLOMA MARGARITACEUM	1	0.102	0	0.0
STRIGILLA MIRABILIS	17	1.738	0	0.0
TELLINA IRIS	2	0.204	0	0.0
TELLINA TEXANA	9	0.920	1	0.356
TELLINA VERSICOLOR	26	2.658	5	1.779
ANNELIDA (SEGMENTED WORMS)				
CLIGGCHAETA				
UNIDENTIFIED SP.	19	1.943	3	1.068
PCLYCHAETA				
APPROPHIONOSPILO PYGMAEA	0	0.0	3	1.068
ARICIDEA CERRUTI	1	0.102	0	0.0
ARICIDEA SUECICA	7	0.716	0	0.0
ARMANCIA AGILIS	1	0.102	1	0.356
ARMANDIA MACULATA	10	1.022	0	0.0
BRANIA WELLFLEETENSIS	13	1.329	0	0.0
CERA TONEREIS IRRITABILIS	5	0.511	11	3.915
CHAE TOZCNE SE TOSA	0	0.0	2	0.712
CHONE SP.	10	1.022	0	0.0
DIOPATIRA CUPREA	1	0.102	0	0.0
DOORVILLEA SOCIAEFLILIS	3	0.307	0	0.0
ETEONE LACTEA	4	0.409	1	0.356
GLYCERA AMERICANA	9	0.920	9	3.203
GLYCERA DIBRANCHIATA	2	0.204	0	0.0
GONIACA LITTICREA	1	0.102	0	0.0
GYPTIS VITTATA	2	0.204	0	0.0
HAPLOSCCICLPLCS FOLIOSUS	4	0.409	8	2.847
HAPLOSCCICLPLCS FRAGILIS	1	0.102	0	0.0
HAPLOSCCICLPLCS ROBUSTUS	1	0.102	0	0.0
HARMOTHICE LUNULATA	0	0.0	1	0.356
LUMBFINERIS CRUZENSIS	442	45.194	72	25.623
LUMBFINERIS TETRAURA	2	0.204	0	0.0
MAGELINA SP.	1	0.102	0	0.0
MEDICMASTUS CALIFORNIENSIS	1	0.102	1	0.356
NEANTLES ACUMINATA	1	0.102	1	0.356
NEPHYTIS PICTA	0	0.022	2	0.712
NOTOCMASTUS HEMIPODUS	2	0.204	4	1.423

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL
 10/18/76
 (CONTINUED)

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
<u>NOTOCMASTUS LATERICEUS</u>	0	0.0	1	0.356
<u>CNUPHIS EREMITA CCULATA</u>	1	0.102	6	2.135
<u>CRBINIA RISERTI</u>	1	0.102	0	0.0
<u>CWENIA FUSIFORMIS</u>	1	0.102	0	0.0
<u>PARANAIITES SPECIOSA</u>	2	0.204	0	0.0
<u>PARACNIDES LYRA</u>	1	0.102	0	0.0
<u>PARACNIS FULGENS</u>	2	0.204	0	0.0
<u>PARACNIS SP.</u>	1	0.102	0	0.0
<u>PARAPRIONOSPPIO PINNATA</u>	1	0.102	3	1.068
<u>PHYLLODOCE ARENAE</u>	0	0.0	2	0.712
<u>PRIONOSPPIO CRISTATA</u>	77	7.873	27	9.609
<u>RULL TERREREIS MEXICANA</u>	15	1.534	14	4.982
<u>SCOLELEPIS TEXANA</u>	1	0.102	0	0.0
<u>SCOLOPLOS ARMIGER</u>	37	3.783	0	0.0
<u>SCOLOPLOS RUBRA</u>	1	0.102	0	0.0
<u>SIGAMBRA RASSI</u>	3	0.307	0	0.0
<u>SIGAMBRA TENTACULATA</u>	0	0.0	3	1.068
<u>SPIOT PETTIBONEAE</u>	2	0.204	2	0.712
<u>SPIOPHANES BOMBYX</u>	3	0.307	4	1.423
ARTHROPODA (CRUSTACEANS)				
<u>AMPHIPODA</u>				
<u>AMPELISCA VERRILLI</u>	14	1.431	29	10.320
<u>ARGISCA SP.</u>	1	0.102	0	0.0
<u>LISTRIELLA SP.</u>	5	0.511	3	1.068
<u>MONOCLOODES SP.</u>	19	1.943	6	2.135
<u>PARAFAHOXUS SP.</u>	1	0.102	0	0.0
<u>PHCTIS SP.</u>	1	0.102	0	0.0
<u>PROCTCHAUSTORIUS SP.</u>	7	0.716	0	0.0
<u>PSEUDCHAUSTORIUS SP.</u>	1	0.102	0	0.0
<u>PSEUDOPLATYISCHNCPUIS SP.</u>	28	2.863	20	7.117
<u>SYNCELELIDIUM SP.</u>	3	0.307	1	0.356
<u>TIRCA EIOSCELLATUS</u>	0	0.0	1	0.356
<u>ANOMURA</u>				
<u>ALBUNEA FARETII</u>	3	0.307	4	1.423
<u>EUCEFRAMUS PRAEOLONGUS</u>	1	0.102	2	0.712
<u>PAGURUS SP.</u>	1	0.102	1	0.356
<u>CALLIANASSA IDAE</u>				
<u>CALLIANASSA JAMAICENSE</u>	0	0.0	1	0.356
<u>CARIDEA</u>				
<u>UGYRIDES LIMICOLA</u>	0	0.0	1	0.356
<u>CUMACEA</u>				
<u>CYCLAPYSIS SP.</u>	31	3.170	1	0.356
<u>OXYUROSTYLLIS SMITHI</u>	0	0.0	1	0.356
<u>MYSIACEA</u>				
<u>UNIDENTIFIED SP.</u>	1	0.102	0	0.0
<u>OSTRACODA</u>				
<u>UNIDENTIFIED SP.</u>	8	0.818	1	0.356
ECHINODERMA				
<u>ASTEROIDEA (STARFISHES)</u>				
<u>ASTROPECTEN ARTICULATUS</u>	1	0.102	0	0.0
<u>ECHINOIDEA (SAND DOLLARS; URCHINS)</u>				
<u>MELLITA QUINQUESPERFORATA</u>	4	0.409	0	0.0
<u>HOLOTHUROIDEA (SEA CUCUMBERS)</u>				
<u>LEPTOSYNAFTA SP.</u>	1	0.102	1	0.356
<u>OPHIURICIDEA (BRITTLE STARS)</u>				
<u>OPHICOPHRAGMUS WURDEMANI</u>	2	0.204	0	0.0
<u>UNIDENTIFIED SP.</u>	1	0.102	0	0.0
CEPHALOCHORDATA (LANCELETS)				

TREASLRE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL
11/1/76

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
CNIDARIA ACTINIARIA (SEA ANEMONES) UNIDENTIFIED SP.	3	0.397	0	0.0
PLATYHELMINTHES TURBELLARIA (FLATWORMS) UNIDENTIFIED SP.	2	0.265	2	0.391
NEMERTINEA (RIBBON WORMS) UNIDENTIFIED SP.	18	2.384	6	1.174
NEMATODA (ROUNDWORMS) UNIDENTIFIED SP.	8	1.060	1	0.196
MOLLUSCA (SHELLFISH) GASTROPODA (SNAILS) <i>NATICA PUSILLA</i>	1	0.132	0	0.0
<i>OLIVELLA BULLULIA</i>	1	0.132	3	0.587
<i>TERFERA DISLOCATA</i>	1	0.132	0	0.0
PELECYPODA (CLAMS) <i>CARDIOMYIA COSTELLATA</i>	0	0.0	1	0.196
<i>ERVILIA CONCENTRICA</i>	1	0.132	0	0.0
<i>LUCINA MULTILINEATA</i>	2	0.265	14	2.740
<i>SEMELE PROFICUA</i>	0	0.0	1	0.196
<i>STRIGILLA MIRABILIS</i>	1	0.325	0	0.0
<i>TELLINA A. TAYLORIANA</i>	0	0.0	1	0.196
<i>TELLINA IRIS</i>	0	0.0	3	0.587
<i>TELLINA TEXANA</i>	4	0.530	0	0.0
<i>TELLINA VERSICOLOR</i>	16	2.119	7	1.370
ANNELIDA (SEGMENTED WORMS) OLIGCHAETA UNIDENTIFIED SP.	35	4.636	1	0.196
POLYCHAETA <i>APOPRONOSPIS PYGMAEA</i>	1	0.132	0	0.0
<i>ARICIDEA SUECICA</i>	5	0.662	0	0.0
<i>ARMANDIA MACULATA</i>	5	0.662	2	0.391
<i>BRANIA CLAVATA</i>	1	0.132	0	0.0
<i>BRANIA WELLFLEETENSIS</i>	12	1.589	0	0.0
<i>CAULLERIELLA SP.</i>	1	0.132	0	0.0
<i>CERA TONEREIS IRRITABILIS</i>	11	1.457	18	3.523
<i>CHAE TOZONE SETOSA</i>	1	0.132	1	0.196
<i>CHONE SP.</i>	7	0.927	0	0.0
<i>ETEONE LACTEA</i>	2	0.265	0	0.0
<i>EUNICE ANTENNATA</i>	1	0.132	0	0.0
<i>EURYTHCE COMPLANATA</i>	0	0.0	1	0.196
<i>GLYCERA AMERICANA</i>	7	0.927	8	1.566
<i>GLYCERA DIPRANCHIATA</i>	2	0.265	1	0.196
<i>GONIADA LITTICREA</i>	2	0.265	1	0.196
<i>GYPTIS VITTATA</i>	7	0.927	0	0.0
<i>HAPLISCOLICLIPS FOLIOSUS</i>	7	0.927	0	0.0
<i>HAPLISCOLICLIPS FRAGILIS</i>	5	0.662	2	0.391
<i>HAPLISCOLOPLOS ROBUSTUS</i>	0	0.0	1	0.196
<i>LUMBRINERIS CRZENSI</i>	342	45.298	216	42.270
<i>LUMBRINERIS TETRAURA</i>	4	0.530	1	0.196
<i>MAGELCNA LONGICORNIS</i>	0	0.0	2	0.391
<i>MEDICIMASTUS CALIFORNIENSIS</i>	2	0.265	2	0.391
<i>NEANTHEIS SUCCINEA</i>	0	0.0	1	0.196
<i>NEPHIYS BUCERA</i>	2	0.265	0	0.0
<i>NEPHIYS PICTA</i>	9	1.192	1	0.196

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL
10/18/76
(CONTINUED)

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
<u>BRANCHICESTOMA FLORIDAEE</u>	21	2.147	1	0.356
TOTALS	978		281	
NO. SPECIES		77		46
NO. IND. PER M ²		3912		1124
S-W INDEX - H'(LN)		2.6227		2.9372
EVENNESS - J		0.6038		0.7672

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL

11/1/76
(CONTINUED)

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
<u>NOTOMASTUS HEMIPODUS</u>	1	0.132	1	0.196
<u>ONUPHIS EREMITA OCULATA</u>	11	1.457	6	1.174
<u>ONUPHIS NEBULOSA</u>	2	0.265	2	0.391
<u>ORBINIA RISERI</u>	1	0.132	0	0.0
<u>OWENIA FUSIFORMIS</u>	1	0.132	0	0.0
<u>PARACNIDES LYRA</u>	1	0.132	0	0.0
<u>PARACNIDES FULGENS</u>	6	0.795	1	0.196
<u>PARAFRANCSPIC PINNATA</u>	0	0.0	8	1.566
<u>PHYLLOCOCCE ARENAE</u>	2	0.265	1	0.196
<u>PRIONCSPIC CRISTATA</u>	15	1.987	14	2.740
<u>RULLIERINEREIS MEXICANA</u>	11	1.457	17	3.327
<u>SCOLOPLECS ARMIGER</u>	30	3.974	10	1.957
<u>SCOLOPLECS RUBRA</u>	3	0.397	0	0.0
<u>SIGAMERA BASSI</u>	1	0.132	0	0.0
<u>SIGAMERA TENTACULATA</u>	0	0.0	1	0.196
<u>SPILO PETTIBONEAE</u>	1	0.132	2	0.391
<u>SPIOPHANES BOMBYX</u>	0	0.0	7	1.370
 ARTHROPODA (CRUSTACEANS)				
AMPHIPODA				
<u>ACANTHOAUSTORIUS SP.</u>	2	0.265	0	0.0
<u>AMPELISCA VERRILLI</u>	5	0.662	29	5.675
<u>LISTFIELDIA SP.</u>	3	0.397	3	0.587
<u>MONOCULODES SP.</u>	8	1.060	18	3.523
<u>PROTOAUSTORIUS SP.</u>	6	0.795	0	0.0
<u>PSEUCOAUSTORIUS SP.</u>	18	2.384	0	0.0
<u>PSEUDOPLATYTSCHNOPLIS SP.</u>	65	8.609	66	12.916
<u>SYNCFELIDIUM SP.</u>	0	0.0	1	0.196
ANOMURA				
<u>ALBUNEA PARETII</u>	0	0.0	6	1.174
BRACHYURA				
<u>OVALIFES CCELLATUS</u>	3	0.397	1	0.196
<u>PINNIXIA SAYANA</u>	0	0.0	1	0.196
CALLIANASSIDAE				
<u>CALLIANASSA JAMAICENSIS</u>	1	0.132	0	0.0
CARIDEA				
<u>LEPTOCHELA SERRATORBITA</u>	0	0.0	1	0.196
<u>PROCESSA HEMPHILLI</u>	2	0.265	2	0.391
CUMACEA				
<u>CYCLAPSIS SP.</u>	2	0.265	1	0.196
<u>CYCLAPSIS VARIANS</u>	2	0.265	0	0.0
MYSIDACEA				
<u>UNIDENTIFIED SP.</u>	1	0.132	2	0.391
OSTRACODA				
<u>UNIDENTIFIED SP.</u>	1	0.132	2	0.391
 ECHINODERMATA				
ASTEROIDEA (STARFISHES)				
<u>ASTROFECTEN ARTICULATUS</u>	2	0.265	2	0.391
ECHINOIDEA (SAND DOLLARS; URCHINS)				
<u>MELITTA QUINQUIESPERFORATA</u>	1	0.132	0	0.0
HOLOTHUROIDEA (SEA CUCUMBERS)				
<u>LEPTOSYNAPTA SP.</u>	1	0.132	2	0.391
OPHIURICIDA (BRITTLE STARS)				
<u>OPHIOPHRAGMUS WURDEMANNI</u>	0	0.0	1	0.196
 CEPHALOCHORDATA (LANCETTS)				
<u>BRANCHIOSTOMA FLORIDAE</u>	8	1.060	5	0.978

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL
11/1/76
(CONTINUED)

SPECIES	NO. OF IND. (C.) TOTAL PERCENT	NO. OF IND. (E.) TOTAL PERCENT
TOTALS	755	511
NO. SPECIES	67	55
NO. IND. PER M2	3020	2044
S-W INDEX - H'(LN)	2.6057	2.4953
EVENNESS - J	0.6197	0.6227

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL
 12/1/76

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
NEMERTINEA (RIBBON WORMS)				
UNIDENTIFIED SP.	29	3.766	15	1.695
NEMATODA (ROUNDWORMS)				
UNIDENTIFIED SP.	26	3.377	2	0.226
PHORONIDA (PHORONIDS)				
<u>PHORONIS ARCHITECTA</u>	3	0.390	0	0.0
MOLLUSCA (SHELLFISH)				
GASTROPODA (SNAILS)				
<u>NASSARIUS ACUTUS</u>	1	0.130	0	0.0
<u>POLINICES DUPLICATUS</u>	2	0.260	2	0.226
PELECYPODA (CLAMS)				
<u>ERVILIA CONCENTRICA</u>	1	0.130	0	0.0
<u>LUCINA MULTILINEATA</u>	12	1.558	6	0.678
<u>PERIFLUMA MARGARITACEUM</u>	4	0.519	0	0.0
<u>SEMELE FFCIFICA</u>	2	0.260	0	0.0
<u>STRIGILLA MIRABILIS</u>	2	0.260	6	0.678
<u>TELLINA TEXANA</u>	0	0.0	5	0.565
<u>TELLINA VERSICOLOR</u>	13	1.688	6	0.678
ANNELIDA (SEGMENTED WORMS)				
OLIGOCHAETA				
UNIDENTIFIED SP.	45	5.844	9	1.017
POLYCHAETA				
<u>AGLAOPHAMS VERRILLI</u>	1	0.130	0	0.0
<u>AMPHARETE ACUTIFRONS</u>	1	0.130	0	0.0
<u>ARCPHICHLIS PEGMAEA</u>	3	0.390	3	0.339
<u>ARICIDEA CERFUTI</u>	11	1.429	1	0.113
<u>ARICIDEA FRAGILIS</u>	1	0.130	1	0.113
<u>ARMANDIA AGILIS</u>	2	0.260	6	0.678
<u>ARMANDIA MACULATA</u>	5	0.649	9	1.017
<u>AXIOTELLA MUCOSA</u>	1	0.130	0	0.0
<u>FRANIA CLAVATA</u>	2	0.260	1	0.113
<u>FRANIA WELLFLEETENSIS</u>	2	0.260	0	0.0
<u>CABIRIA INCERTA</u>	0	0.0	1	0.113
<u>CERATNEREIS IRRITABILIS</u>	2	0.260	6	0.678
<u>CHAETZONE SETOSA</u>	0	0.0	1	0.113
<u>CHONE SP.</u>	8	1.039	0	0.0
<u>CISTENICIDES GOULDII</u>	2	0.260	0	0.0
<u>ETECHE LACTEA</u>	5	0.649	4	0.452
<u>GLYCERA AMERICANA</u>	3	0.390	8	0.504
<u>GLYCERA DIBRANCHIATA</u>	1	0.130	0	0.0
<u>CONIACA LITOREA</u>	7	0.909	1	0.113
<u>GYPTIS VITTATA</u>	6	0.779	0	0.0
<u>HAPLOSCOLOPLOS FOLIOSUS</u>	8	1.039	11	1.243
<u>HAPLOSCOLOPLOS FRAGILIS</u>	10	1.299	3	0.339
<u>HAPLOSCOLOPLOS RODUSTUS</u>	1	0.130	0	0.0
<u>ISOLEA PULCHELLA</u>	1	0.130	0	0.0
<u>LUMBRINERIS CRUZENSIS</u>	240	31.169	429	48.475
<u>LUMBRINERIS TENUIS</u>	21	2.727	5	0.565
<u>MAGELCNA LONGICORNIS</u>	0	0.0	2	0.226
<u>MAGELCNA PETTIBONEAE</u>	1	0.130	0	0.0
<u>MAGELCNA RIOJAI</u>	0	0.0	1	0.113
<u>MEDILASTUS CALIFORNiensis</u>	2	0.260	0	0.0
<u>MINIPTO CIRRIFERA</u>	1	0.130	0	0.0
<u>NEANTLES ACUMINATA</u>	0	0.0	1	0.113
<u>NEPHIYS BUCERA</u>	1	0.130	1	0.113
<u>NEPHIYS PICTA</u>	0	0.0	2	0.226

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL
 12/1/76
 (CONTINUED)

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
<u>NOTOMASTUS HEMIPODUS</u>	1	0.130	4	0.452
<u>NOTOMASTUS LATERICEUS</u>	2	0.260	0	0.0
<u>ONUPHIS EREMITA OCULATA</u>	28	3.636	15	1.695
<u>ONUPHIS NEBULOSA</u>	4	0.519	0	0.0
<u>OWENIA FUSIFORMIS</u>	1	0.130	0	0.0
<u>PARACNIDES LYRA</u>	4	0.519	0	0.0
<u>PARACNIDES FULGENS</u>	1	0.130	3	0.339
<u>PARAFFICNCSPIO PINNATA</u>	0	0.0	3	0.339
<u>PHYLLOCIDCE ARENAE</u>	0	0.0	4	0.452
<u>PRICNISPIC CRISTATA</u>	41	5.325	55	6.215
<u>RULLIERINEREIS MEXICANA</u>	12	1.558	9	1.017
<u>SCCLIFLCS ARMIGER</u>	34	4.416	44	4.972
<u>SCOLOPLOS RUBRA</u>	1	0.130	0	0.0
<u>SIGAMBRA TENTACULATA</u>	1	0.130	0	0.0
<u>SPIO PETTIBONEAE</u>	1	0.130	1	0.113
<u>SPIOPLANES BOMBYX</u>	4	0.519	5	0.565
 ARTHROPOCA (CRUSTACEANS)				
AMPHIPODA				
<u>ACANTHCHAUSTORIUS SP.</u>	1	0.130	3	0.339
<u>AMPELISCA VERRILLI</u>	10	1.299	23	2.599
<u>HYPERRIA SP.</u>	14	1.818	0	0.0
<u>LISTRIELLA SP.</u>	4	0.519	4	0.452
<u>MONGCULIDES SP.</u>	4	0.519	7	0.791
<u>PROTOFAUSTORIUS SP.</u>	0	0.0	9	1.017
<u>PSEUDOFIAUSTORIUS SP.</u>	2	0.260	8	0.904
<u>PSEUDOPLATYISCHNORUS SP.</u>	79	10.260	117	13.220
<u>SYNCHELIDIUM SP.</u>	1	0.130	1	0.113
<u>TIRON SP.</u>	1	0.130	0	0.0
ANOMURA				
<u>ALBUNEA PARETII</u>	4	0.519	6	0.678
<u>PAGURUS LONGICARPUS</u>	2	0.260	0	0.0
BRACHYURA				
<u>CVALIFES CCELLATUS</u>	2	0.260	1	0.113
CALLIANASSIDAE				
<u>CALLIANASSA JAMAICENSE</u>	1	0.130	0	0.0
CARIDEA				
<u>HIPPOLYTE PLEURA CANTHA</u>	1	0.130	0	0.0
<u>LEPTOCFELA SERRATORBITA</u>	0	0.0	2	0.226
CUMACEA				
<u>CYCLAFSIS SP.</u>	1	0.130	1	0.113
<u>CYCLAFSIS VARIANS</u>	2	0.260	0	0.0
OSTRACODA				
UNIDENTIFIED SP.	3	0.390	2	0.226
PEMIDEA				
<u>TRACHYPENAEUS CONSTRICTUS</u>	1	0.130	1	0.113
 ECHINODERMATA				
HOLOTHURIOIDEA (SEA CUCUMBERS)				
<u>LEPTCSYNAPTA SP.</u>	3	0.390	0	0.0
 CEPHALOCHORDATA (LANCETEATS)				
<u>BRANCHIOSTOMA FLORIDAE</u>	10	1.299	9	1.017
TOTALS	770		865	
NO. SPECIES		74		54
NO. IND. PER M2		3080		3540
S-W INDEX - H ⁰ (LN)		2.9874		2.2595
EVENNESS - J		0.6941		0.5664

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL
 1/5/77

SPECIES	NO. OF TOTAL	IND. PERCENT	NO. OF IND. (E.)		PERCENT
			TOTAL	PERCENT	
CNIDARIA					
ACTINIANARIA (SEA ANEMONES)					
UNIDENTIFIED SP.	3	0.696	0	0.0	
NEMERTINEA (RIBBON WORMS)					
UNIDENTIFIED SP.	9	2.088	13	2.372	
NEMATODA (ROUNDWORMS)					
UNIDENTIFIED SP.	8	1.856	1	0.182	
MOLLUSCA (SHELLFISH)					
GASTROPODA (SNAILS)					
ACTECCINA CANDEI	1	0.232	0	0.0	
POLINICES DUPLICATUS	0	0.0	1	0.182	
PELECYPODA (CLAMS)					
LUCINA MULTILINEATA	1	0.232	3	0.547	
PERIFLUMA MARGARITACEUM	0	0.0	3	0.547	
STRIGILLA MIRABILIS	5	1.160	0	0.0	
TELLINA TEXANA	1	0.232	0	0.0	
TELLINA VERSICOLOR	18	4.176	1	0.182	
ANNELIDA (SEGMENTED WORMS)					
OLIGOCHAETA					
UNIDENTIFIED SP.	57	13.225	2	0.365	
POLYCHAETA					
AGLAOPHAMUS VERRILLI	1	0.232	0	0.0	
ADOPRIONOSPILO PYGMAEA	0	0.0	1	0.182	
ARICIDEA CERRUTI	2	0.464	0	0.0	
ARMANDIA AGILIS	1	0.232	3	0.547	
ARMANDIA MACULATA	3	0.696	0	0.0	
BRANTA WELLFLEETENSIS	1	0.232	0	0.0	
CERATONEUREIS IRRITABILIS	0	0.0	6	1.095	
CHNE SP.	6	1.392	3	0.547	
CISTERNIDES GOULDII	0	0.0	1	0.182	
DICPATRA CUPREA	1	0.232	0	0.0	
GLYCERA AMERICANA	8	1.856	4	0.730	
GNIADA LITTorea	1	0.232	0	0.0	
GYPTIS VITTATA	2	0.464	0	0.0	
HAFLISCCLOPLCS FOLIOSUS	2	0.464	0	0.0	
HAFLISCCLOPLCS FRAGILIS	0	0.0	1	0.182	
LUMBFINERIS ACUTUS	4	0.928	0	0.0	
LUMBFINERIS CRUZENSIS	15	3.480	343	62.591	
LUMBFINERIS TENUIS	2	0.464	0	0.0	
LUMBFINERIS TETRAURA	4	0.928	0	0.0	
MACRICLYMENE ZONALIS	1	0.232	1	0.182	
MAGELCNA LONGICORNIS	1	0.232	0	0.0	
MAGELCNA SP.	2	0.464	0	0.0	
NEPHTYS BUCERA	1	0.232	0	0.0	
NEPHTYS PICTA	4	0.928	0	0.0	
NOTOMASTUS HEMIPODUS	2	0.464	0	0.0	
NOTOMASTUS LATERICEUS	0	0.0	1	0.182	
CUPIFIS FREMITA OCULATA	0	0.0	3	0.547	
PARACNIDES LYRA	0	0.0	1	0.182	
PARACNIS FULGENS	1	0.232	0	0.0	
PARAPRIONOSPILO PINNATA	0	0.0	3	0.547	
PHYLLODOCE ARENAE	0	0.0	3	0.547	
PRIONOSPILO CRISTATA	16	3.712	35	6.387	
RULLIERINEREIS MEXICANA	13	3.016	2	0.365	
SCOLELEPIS SQUAMATA	2	0.464	0	0.0	
SCOLELEPIS TEXANA	3	0.696	0	0.0	

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL

1/5/77

(CONTINUED)

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
<u>SCOLOPLOS ARMIGER</u>	35	8.121	23	4.197
<u>SIGAMBRA BASSI</u>	1	0.232	0	0.0
<u>SPIO PETTIBONEAE</u>	1	0.232	0	0.0
<u>SPiOPHANES BOMBYX</u>	6	1.392	11	2.007
 ARTHROPODA (CRUSTACEANS)				
AMPHIPODA				
<u>ACANTHOHAUSTORIUS SP.</u>	3	0.696	0	0.0
<u>AMPELISCA VERRILLI</u>	1	0.232	10	1.825
<u>ERICHTHONIUS SP.</u>	2	0.464	0	0.0
<u>LISTRIELLA SP.</u>	2	0.464	1	0.182
<u>MONOCULODES SP.</u>	1	0.232	1	0.182
<u>PROTOHALSTORIUS SP.</u>	15	3.480	4	0.730
<u>PSEUDHALSTORIUS SP.</u>	40	9.281	4	0.730
<u>PSEUDOPLATYISCHNOPUS SP.</u>	95	22.042	45	8.212
<u>SYNCHELIDIUM SP.</u>	0	0.0	3	0.547
ANOMURA				
<u>PAGURUS LONGICARPUS</u>	2	0.464	0	0.0
BRACHYURA				
<u>ovalipes ocellatus</u>	2	0.464	2	0.365
<u>PINNIXIA SAYANA</u>	2	0.464	1	0.182
CARIDEA				
<u>HIPPLYTE PLEUROCANTHA</u>	1	0.232	0	0.0
CUMACEA				
<u>CYCLOPSIS VARIANS</u>	1	0.232	0	0.0
 ECHINODERMA				
ECHINOIDEA (SAND DOLLARS; URCHINS)				
<u>MELLITA QUINQUIESPERFORATA</u>	1	0.232	0	0.0
HOLOTUFOIDEA (SEA CUCUMBERS)				
<u>LEPTSYNAPTA SP.</u>	2	0.464	3	0.547
 HEMICHORDATA				
ENTEROPNEUSTA (ACRON WORMS)				
<u>UNIDENTIFIED SP.</u>	1	0.232	0	0.0
 CEPHALOCHORDATA (LANCELETS)				
<u>BRANCHIOSTOMA FLORIDAE</u>	15	3.480	5	0.912
 TOTALS				
NO. SPECIES	431	56	36	36
NO. IND. FER M2		1724		2192
S-W INDEX - H ⁰ (LN)		3.0102		1.7037
EVENNESS - J		0.7478		0.4754

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL
2/2/77

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
NEUROPTERA (RIBBON WORMS) UNIDENTIFIED SP.	16	4.222	16	2.893
NEMATODA (FECUNDWORMS) UNIDENTIFIED SP.	18	4.749	0	0.0
MOLLUSCA (SHELLFISH)				
GASTROPODA (SNAILS)				
ANACHIS FLORIDANA	1	0.264	0	0.0
NATICA PLISILLA	4	1.055	1	0.181
OLIVA SAYANA	0	0.0	1	0.181
POLINICES DUPLICATUS	1	0.264	0	0.0
TURBONILLA CONRADII	1	0.264	0	0.0
PELCYPODA (CLAMS)				
LUCINA MULTILINNEATA	6	1.583	15	2.712
MACROCALLISTA NIMBOSA	2	0.528	0	0.0
PERIPLOMA MARGARITACEUM	1	0.264	0	0.0
PITAR SIMPSONI	1	0.264	0	0.0
STRIGILLA MIRABILIS	6	1.583	0	0.0
TELLINA TEXANA	2	0.528	1	0.181
TELLINA VERSICOLOR	7	1.847	3	0.542
ANNELIDA (SEGMENTED WORMS)				
OLIGOCHAETA				
UNIDENTIFIED SP.	35	9.235	4	0.723
POLYCHAETA				
AGLAOPHAMUS VERRILLI	0	0.0	1	0.181
APOPROTONOSPPIO PYGMAEA	1	0.264	0	0.0
ARICICEA CERRUTI	0	0.0	1	0.181
ARICICEA FRAGILIS	0	0.0	2	0.362
ARMANDIA AGILIS	1	0.264	1	0.181
ARMANDIA MACULATA	6	1.583	0	0.0
BRANIA CLAVATA	3	0.792	0	0.0
BRANIA WELLFLEETENSIS	1	0.264	0	0.0
CHAETOCONE SE TOSA	0	0.0	2	0.362
CHONE SP.	4	1.055	4	0.723
DIOPATRA CUPREA	0	0.0	2	0.362
ETEONE LACTEA	0	0.0	1	0.181
GLYCERA AMERICANA	1	0.264	0	0.0
GLYCERA DIBRANCHIATA	0	0.0	2	0.362
GONIADA LITTOREA	1	0.264	2	0.362
GYPTIS VITATA	1	0.264	0	0.0
HAPLOSCOLOPLOS FOLIOSUS	1	0.264	0	0.0
HAPLOSCOLOPLOS FRAGILIS	2	0.528	1	0.181
LUMBRINERIS CRUZENSIS	6	1.583	325	58.770
LUMBRINERIS TETRAURA	5	1.319	1	0.181
MAGELONA LONGICORNIS	0	0.0	4	0.723
MAGELONA SP.	1	0.264	0	0.0
MEDICASTUS CALIFORNIENSIS	0	0.0	2	0.362
NEANTHES SP.	0	0.0	2	0.362
NEPHIYS BUCERA	1	0.264	0	0.0
NEPHIYS PICTA	3	0.792	3	0.542
NOTOMASTUS HEMIPODUS	1	0.264	0	0.0
ONCHOPHIS EREMITA OCULATA	2	0.528	32	5.787
PARACNIDES LYRA	1	0.264	0	0.0
PARACNIDES FULGENS	1	0.264	0	0.0
POLYDORA TETRAERANCHIA	2	0.528	1	0.181
PRIONOSPIC CRISTATA	15	3.958	31	5.606
RULLIERINE REIS MEXICANA	7	1.847	7	1.266
SCOLELEPIS SQUAMATA	5	1.319	2	0.362

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL
 2/2/77
 (CONTINUED)

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
<u>SCOLELEPIS TEXANA</u>	9	2.375	4	0.723
<u>SCOLEPLCS ARMIGER</u>	28	7.388	2	0.362
<u>SIGAMBRA TENTACULATA</u>	0	0.0	1	0.181
<u>SPIO PETTIBONEAE</u>	1	0.264	0	0.0
<u>SPiOPHANES BCMBYX</u>	11	2.902	26	4.702
ARTHROPODA (CRUSTACEANS)				
AMPHIPODA				
<u>ACANTHOCHAUSTORIUS SP.</u>	16	4.222	2	0.362
<u>AMPELISCA VERRILLI</u>	2	0.528	0	0.0
<u>LISTRIELLA SP.</u>	3	0.792	0	0.0
<u>MONOCULIDES SP.</u>	1	0.264	0	0.0
<u>PRCTCHAUSTORIUS SP.</u>	34	8.971	2	0.362
<u>PSUEDOCHAUSTORIUS SP.</u>	0	0.0	1	0.181
<u>PSUEDOPLATYISCHNOPUS SP.</u>	88	23.219	35	6.329
<u>SYNCHELIDIUM SP.</u>	2	0.528	0	0.0
ANOMURA				
<u>ALBUNEA PARETII</u>	0	0.0	4	0.723
<u>ERACHYURA</u>				
<u>CVALIFES CCELLATUS</u>	0	0.0	1	0.181
<u>CUNACEA</u>				
<u>CYCLAPSIS VARIANS</u>	0	0.0	1	0.181
<u>DESTRACODA</u>				
<u>UNIDENTIFIED SP.</u>	3	0.792	1	0.181
<u>PENAIDEA</u>				
<u>SICYCNIA BREVIROSTRIS</u>	0	0.0	1	0.181
ECHINODERMATA				
ASTEROIDEA (STARFISHES)				
<u>ASTROPECTEN ARTICULATUS</u>	1	0.264	0	0.0
ECHINOIDEA (SAND DOLLARS; URCHINS)				
<u>MCIRA ATROPIS</u>	1	0.264	0	0.0
HOLOTHURIDEA (SEA CUCUMBERS)				
<u>LEPTOSYNAPTA SP.</u>	0	0.0	1	0.181
CEPHALOCHORDATA (LANCELETS)				
<u>BRANCHIOSTOMA FLORIDAE</u>	6	1.583	1	0.181
TOTALS	379		553	
NO. SPECIES		53		44
NO. IND. PER M2		1516		2212
S-W INDEX - H ¹ (LN)		3.0609		1.8770
EVENNESS - J		0.7710		0.4960

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL
3/1/77

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
NEMERTINEA (RIBBON WORMS) UNIDENTIFIED SP.	17	2.881	17	1.822
NEMATODA (ROUNDWORMS) UNIDENTIFIED SP.	6	1.017	10	1.072
PHORONIDA (PHORONIDS) <u>PHORONIS ARCHITECTA</u>	1	0.169	0	0.0
MOLLUSCA (SHELLFISH) GASTROPODA (SNAILS)				
<u>ACTECCINA CANALICULATA</u>	1	0.169	0	0.0
<u>ANACHIS FLORICANA</u>	1	0.169	0	0.0
<u>NATICA PUSILLA</u>	3	0.508	6	0.643
<u>CLIVA SAYANA</u>	1	0.169	0	0.0
<u>POLINICES DUPLICATUS</u>	4	0.678	1	0.107
<u>TURBONILLA CONRADI</u>	4	0.678	2	0.214
PELICYPODA (CLAMS)				
<u>LUCINA MULTILINEATA</u>	8	1.356	6	0.643
<u>PERIFLUMA MARGARITACEUM</u>	3	0.508	1	0.107
<u>STRIGILLA MIRABILIS</u>	0	0.0	3	0.322
<u>TELLINA AEGUSTRIATA</u>	1	0.169	0	0.0
<u>TELLINA VERSICOLOR</u>	10	1.695	9	0.965
ANNELIDA (SEGMENTED WORMS)				
OLIGOCHAETA				
UNIDENTIFIED SP.	59	10.000	5	0.536
POLYCHAETA				
<u>AGLAOPHAMUS VERRILLI</u>	2	0.339	1	0.107
<u>AMPHARETE ACUTIFRONS</u>	0	0.0	1	0.107
<u>APOPIONOSPPIO PYGMAEA</u>	0	0.0	1	0.107
<u>ARICIDEA CERRUTI</u>	2	0.339	5	0.536
<u>ARICIDEA FRAGILIS</u>	1	0.169	0	0.0
<u>ARICIDEA PHILIBINAE</u>	4	0.678	0	0.0
<u>ARICIDEA SLECTICA</u>	1	0.169	0	0.0
<u>ARICIDEA TAYLORI</u>	1	0.169	0	0.0
<u>ARMANDIA AGILIS</u>	4	0.678	10	1.072
<u>BRANIA CLAVATA</u>	0	0.0	5	0.536
<u>BRANIA WELLFLEETENSIS</u>	0	0.0	2	0.214
<u>CAPITELLA CAPITATA</u>	0	0.0	1	0.107
<u>CERATINE REISIRRATIBILIS</u>	0	0.0	2	0.214
<u>CERATINE REIS MIRABILIS</u>	0	0.0	3	0.322
<u>CHICNE SP.</u>	1	0.169	0	0.0
<u>ETECNE LACTEA</u>	1	0.169	0	0.0
<u>GLYCERA AMERICANA</u>	0	0.0	3	0.322
<u>GLYCERA DIBRANCHIAIA</u>	3	0.508	1	0.107
<u>GONIACA LITTOREA</u>	2	0.339	0	0.0
<u>GYPTIS VITTATA</u>	3	0.508	2	0.214
<u>FAPLOSCOLOPLOS FOLIOSUS</u>	2	0.339	0	0.0
<u>FAPLOSCOLOPLOS FRAGILIS</u>	5	0.847	0	0.0
<u>FAPLOSCOLOPLOS ROBUSTUS</u>	0	0.0	1	0.107
<u>LOIMIA VIRIDIS</u>	1	0.169	0	0.0
<u>LUMBRINERIS CRUZENSIS</u>	127	21.525	271	29.046
<u>LUMBRINERIS TETRAURA</u>	29	4.915	3	0.322
<u>MACROCLYMENE ZONALIS</u>	1	0.169	2	0.214
<u>MEDICMASTUS CALIFORNIENSIS</u>	5	0.847	0	0.0
<u>MICROPITHALMUS ABERRANS</u>	0	0.0	1	0.107
<u>MINUSPIO CIRRIFERA</u>	1	0.169	0	0.0
<u>NEPHYS BUCERA</u>	0	0.0	2	0.214
<u>NEPHYS PICTA</u>	25	4.237	28	3.001

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL

3/1/77
(CONTINUED)

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
<u>NOTOCMASTUS HEMIPODUS</u>	3	0.508	2	0.214
<u>CNUPHIS EREMITA OCULATA</u>	11	1.864	26	2.787
<u>CRBINIA RISERI</u>	0	0.0	1	0.107
<u>PARACNIDES LYRA</u>	4	0.678	1	0.107
<u>PARACNIS FUGENS</u>	1	0.169	4	0.429
<u>PHYLLODOCE ARENAE</u>	1	0.169	1	0.107
<u>POLYCORAS SOCIALIS</u>	0	0.0	1	0.107
<u>PRIONOSPILO CRISTATA</u>	29	4.915	146	15.648
<u>PSEUDEURYTHRO AMBIGUA</u>	0	0.0	1	0.107
<u>RULL TERRINEREIS MEXICANA</u>	12	2.034	3	0.322
<u>SCOL ELEPIS SQUAMATA</u>	5	0.847	6	0.643
<u>SCOL ELEPIS TEXANA</u>	0	0.0	9	0.965
<u>SCOLOPLOS ARMIGER</u>	43	7.288	48	5.145
<u>SCOLOPLOS RUBRA</u>	2	0.339	0	0.0
<u>SIGAMBRA TENTACULATA</u>	0	0.0	3	0.322
<u>SPIO PETTIBONEAE</u>	0	0.0	4	0.429
<u>SPIOCHAETOPTERUS OCULATUS</u>	1	0.169	0	0.0
<u>SPIONOPHANES BOMBYX</u>	57	9.661	112	12.004
 <u>SIPUNCULICA (PEANUT WORMS)</u>				
<u>ASPIDOSIPHON SP.</u>	0	0.0	1	0.107
 <u>ARTHROPODA (CRUSTACEANS)</u>				
<u>AMPHIPODA</u>				
<u>ACANTHOHAUSTORIUS SP.</u>	0	0.0	7	0.750
<u>AMPELISCA VERRILLI</u>	3	0.508	3	0.322
<u>LISTRIELLA SP.</u>	2	0.339	4	0.429
<u>MONOCLOODES SP.</u>	1	0.169	4	0.429
<u>PROTOHALSTORIUS SP.</u>	0	0.0	12	1.286
<u>PSEUDOHALSTORIUS SP.</u>	2	0.339	0	0.0
<u>PSEUDOCOPLATYISCHNOPUS SP.</u>	42	7.119	104	11.147
<u>SYNCFELIDIUM SP.</u>	1	0.169	0	0.0
<u>TIRCA BICSCELLATUS</u>	0	0.0	1	0.107
<u>ANCURA</u>				
<u>ALBINEA PARETII</u>	1	0.169	6	0.643
<u>EUCERAMIS PRAEFLONGUS</u>	1	0.169	0	0.0
<u>PAGURIS LONGICARPUS</u>	1	0.169	1	0.107
<u>BRACHYURA</u>				
<u>OVALIPES OCCELLATUS</u>	2	0.339	5	0.536
<u>PINNIXIA SAYANA</u>	0	0.0	1	0.107
<u>CARIDEA</u>				
<u>HIPPOLYTE PLEURA CANTHA</u>	1	0.169	0	0.0
<u>CUMACEA</u>				
<u>CYCLOPSIS SP.</u>	1	0.169	0	0.0
<u>CYCLOPSIS VARIANS</u>	1	0.169	7	0.750
<u>OSTRACODA</u>				
<u>UNIDENTIFIED SP.</u>	8	1.356	2	0.214
 <u>ECHINOCEPHALIA</u>				
<u>ASTERICIDEA (STARFISHES)</u>				
<u>ASTROPECTEN ARTICULATUS</u>	2	0.339	0	0.0
<u>HCLOTHUROIDEA (SEA CUCUMBERS)</u>				
<u>LEPTOCYANAPTA SP.</u>	9	1.525	0	0.0
<u>OPHIURICIDEA (BRITTLE STARS)</u>				
<u>OPHICPHRAGMUS WURDEMANI</u>	0	0.0	1	0.107
 <u>CEPHALOCHORDATA (LANCETEELS)</u>				
<u>BRANCHIESTOMA FLORIDA</u>	3	0.508	1	0.107

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL

3/1/77
(CONTINUED)

SPECIES	NO. OF IND. (G.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
TOTALS	590		933	
NO. SPECIES		64		62
NO. IND. PER M2		2360		3732
S-II INDEX - H'(LN)		3.0592		2.6117
EVENNESS - J		0.7356		0.6328

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL
4/1/77

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
CNIDARIA				
ACTINIARIA (SEA ANEMONES)				
UNIDENTIFIED SP.	2	0.304	0	0.0
NEMERTINEA (RIBBON WORMS)				
UNIDENTIFIED SP.	11	1.672	17	2.163
NEMATODA (ROUNDWORMS)				
UNIDENTIFIED SP.	27	4.103	0	0.0
MOLLUSCA (SHELLFISH)				
GASTROPODA (SNAILS)				
NATICA PUSILLA	0	0.0	1	0.127
TEREERA DISLOCATA	1	0.152	1	0.127
TURBONILLA CONRADI	1	0.152	0	0.0
PELECYPODA (CLAMS)				
ANATINA ANATINA	1	0.152	0	0.0
LUCINA MULTILINEATA	7	1.064	3	0.382
PERIFLIMA MARGARITACEUM	3	0.456	0	0.0
SOLEMYA SP.	0	0.0	5	0.636
STRIGILLA MIRABILIS	2	0.304	0	0.0
TELLIMA VERSICOLOR	11	1.672	13	1.654
ANNELIDA (SEGMENTED WORMS)				
CLIGCCHAETA				
UNIDENTIFIED SP.	31	4.711	10	1.272
PCLYCHAETA				
AGLACPHAMUS VERRILLI	1	0.152	0	0.0
APOPRIONCSPIO PYGMAEA	1	0.152	2	0.254
ARICIDEA FAUVELI	3	0.456	5	0.636
ARMANDIA AGILIS	5	0.760	5	0.636
ARMANDIA MACULATA	2	0.304	1	0.127
ERANIA WELLFLEETENSIS	5	0.760	0	0.0
CERATISEREIS MIRABILIS	0	0.0	2	0.254
CHNE SF.	1	0.152	2	0.254
CIRRATULIDAE UNIDENTIFIED SP.	0	0.0	1	0.127
DIOPATRA CUPREA	0	0.0	1	0.127
DISPIO UNCINATA	20	3.040	4	0.509
ETEONE LACTEA	1	0.152	2	0.254
GLYCERA AMERICANA	6	0.912	5	0.382
GLYCERA DIBRANCHIATA	1	0.152	1	0.127
GOANIACA LITTOREA	1	0.152	0	0.0
GYPTIS BREVIDALPA	5	0.760	0	0.0
HAPLCSCOLOPOLOS FRAGILIS	0	0.0	1	0.127
LUMBRINERIS CRUZENSIS	32	4.863	186	23.664
LUMBRINERIS ERECTA	0	0.0	1	0.127
LUMBRINERIS TETRAURA	10	1.520	1	0.127
MAGELCNA LONGICORNIS	1	0.152	3	0.382
MAGELCNA SP.	3	0.456	1	0.127
MEDICMASTUS CALIFORNIENSIS	1	0.152	3	0.382
NEPHIYS BUCERA	0	0.0	1	0.127
NEPHIYS PICTA	75	11.398	37	4.707
NOTOMASTUS HEMIPODUS	0	0.0	2	0.254
ONUPHIS EREMITA OCULATA	0	0.0	23	2.926
ONUPHIS PALLICA	0	0.0	1	0.127
PARACNIDES LYRA	1	0.152	0	0.0
PARACNIDES FULGENS	8	1.216	1	0.127
PARAFRICNCSPIC PENNATA	3	0.456	4	0.509
PHYLLOCOCCE ARENAE	0	0.0	6	0.763
POLYCIRRUS EXIMIUS	0	0.0	1	0.127

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL

4/1/77

(CONTINUED)

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
<u>POLYDORA SOCIALIS</u>	1	0.152	1	0.127
<u>POLYDORA TETRABRANCHIA</u>	3	0.456	0	0.0
<u>PTRIONGSPIC CRISTATA</u>	26	3.951	51	6.489
<u>PSEUDORYTHOE AMBIGUA</u>	1	0.152	0	0.0
<u>RULLIFERINERIS MEXICANA</u>	6	0.912	2	0.254
<u>SCOLELEPIS TEXANA</u>	39	5.927	24	3.053
<u>SCOLECOPLOS ARMIGER</u>	24	3.647	25	3.181
<u>SCOLELIFCS RUERA</u>	7	1.064	0	0.0
<u>SIGAMBRA PASSI</u>	4	0.608	1	0.127
<u>SIGAMERA TENTACULATA</u>	0	0.0	2	0.254
<u>SPICIFETTIBOCNEAE</u>	0	0.0	1	0.127
<u>SPICIFHANES BCMEYX</u>	102	15.502	316	40.204
 <u>SIPUNCULIDA (PEANUT WORMS)</u>				
<u>GOLFINGIA TRICHOCEPHALA</u>	0	0.0	1	0.127
 <u>ARTHROPODA (CRUSTACEANS)</u>				
<u>AMPHIPODA</u>				
<u>ACANTHCHAUSTORIUS SP.</u>	14	2.128	0	0.0
<u>AMPELISCA VERRILLI</u>	0	0.0	1	0.127
<u>ERIGLTHCNUS SP.</u>	13	1.976	0	0.0
<u>MONOCULOCES SP.</u>	1	0.152	1	0.127
<u>PROTOAUSTORIUS SP.</u>	28	4.255	0	0.0
<u>PSEUDOLATYCHNOPUS SP.</u>	89	13.526	4	0.509
<u>UNIDENTIFIED SP.</u>	3	0.456	0	0.0
<u>ANOMURA</u>				
<u>ALBUNEA PARETII</u>	2	0.304	2	0.254
<u>CARIDEA</u>				
<u>HIPPOLYTE PLEURACANTHA</u>	1	0.152	0	0.0
<u>CUMACEA</u>				
<u>CYCLAPSIS SP.</u>	1	0.152	0	0.0
<u>CYCLAPSIS VARIANS</u>	4	0.608	1	0.127
<u>DESTRACODA</u>				
<u>UNIDENTIFIED SP.</u>	1	0.152	1	0.127
<u>TANAIDACEA</u>				
<u>UNIDENTIFIED SP.</u>	1	0.152	0	0.0
 <u>ECHINODERMATA</u>				
<u>ECHINOIDEA (SAND DOLLARS; URCHINS)</u>				
<u>MOIRA ATROPS</u>	1	0.152	0	0.0
 <u>CEPHALOCHORDATA (LANCETTS)</u>				
<u>BRANCHIOSTOMA FLORIDAE</u>	3	0.456	1	0.127
 <u>TOTALS</u>	658		786	
NO. SPECIES		57		52
NO. IND. PER M ²		2632		3144
S-W INDEX - H ¹ (LN)		3.0944		2.1706
EVENNESS - J		0.7654		0.5493

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL
5/2/77

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
PLATYHELMINTHES				
TURBELLARIA (FLATWORMS)				
UNIDENTIFIED SP.	0	0.0	1	0.242
NEMERTINEA (RIBBED WORMS)				
UNIDENTIFIED SP.	15	2.333	16	3.865
NEMATODA (ROUNDWORMS)				
UNIDENTIFIED SP.	8	1.244	0	0.0
MOLLUSCA (SHELLFISH)				
GASTROPODA (SNAILS)				
NATICA PUSILLA	0	0.0	1	0.242
TURCNILLA CONRADII	2	0.311	0	0.0
PELECYPODA (CLAMS)				
LEPTINA SP.	1	0.156	8	1.932
LUCINA MULTILINEATA	4	0.622	2	0.483
SOLEMYA VELUM	1	0.156	0	0.0
STRIGILLA MIRABILIS	0	0.0	1	0.242
TELLINA TEXANA	0	0.0	1	0.242
TELLINA VERSICOLOR	9	1.400	0	0.0
ANNELIDA (SEGMENTED WORMS)				
CLIOCHETA				
UNIDENTIFIED SP.	29	4.510	7	1.691
POLYCHAETA				
AMPHARETE ACUTIFRONS	0	0.0	1	0.242
APOPRIONOSPIO PYGMAEA	0	0.0	2	0.483
ARICIDEA FAUVELI	4	0.622	5	1.208
ARICIDEA FRAGILIS	5	0.778	4	0.966
ARICIDEA PHILIPPIAE	0	0.0	1	0.242
ARMANDIA AGILIS	1	0.156	0	0.0
BRANIA WELLFLEETENSIS	2	0.311	2	0.483
CAPITELLA CAPITATA	0	0.0	3	0.725
CERATOCEREIS MIRABILIS	2	0.311	5	1.208
CHCNE SP.	2	0.311	1	0.242
DISPICUNCINATA	4	0.622	4	0.966
ETECNE LACTEA	0	0.0	2	0.483
GLYCERA AMERICANA	2	0.311	3	0.725
GYPTIS BREVIPALPA	3	0.467	0	0.0
HAPLISCOLLEPSIS FOLIOSUS	13	2.022	7	1.691
HAPLISCOLLEPSIS FRAGILIS	4	0.622	0	0.0
LOTIA MEDUSA	1	0.156	0	0.0
LUMBFINERIS CRUZENSIS	81	12.597	62	14.976
LUMBFINERIS TETRAURA	15	2.333	3	0.725
MAGELLA LENGICORNIS	1	0.156	2	0.483
MAGELLA SP.	5	0.778	3	0.725
MEDICASTUS CALIFORNiensis	3	0.467	2	0.483
NEPHTYS BUCERA	1	0.156	1	0.242
NEPHTYS PICTA	90	13.997	58	14.010
NOTOMASTUS HEMIPODUS	1	0.156	2	0.483
ONUPHIS EREMITA OCULATA	0	0.0	5	1.208
OPHELIA SP.	2	0.311	0	0.0
PARACNIDES LYRA	5	0.778	1	0.242
PARACNIS FULGENS	1	0.156	0	0.0
PARAPRIONOSPIO PINNATA	3	0.467	50	12.077
PHYLLOOCCE ARNAE	8	1.244	9	2.174
PODARKE OBSCURA	0	0.0	1	0.242
POECILochaetus JOHNSONI	0	0.0	1	0.242
PRIONOSPIO CRISTATA	14	2.177	10	2.415

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL

5/2/77
(CONTINUED)

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
<u>RULLIERINEREIS MEXICANA</u>	4	0.622	2	0.483
<u>SCOL ELEPIS TEXANA</u>	2	0.311	1	0.242
<u>SCOL CFCLOS ARMIGER</u>	0	0.0	3	0.725
<u>SCOL OPLOS RUBRA</u>	0	0.0	14	3.382
<u>SIGAMERA BASSI</u>	1	0.156	0	0.0
<u>SIGAMERA TENIACULATA</u>	1	0.156	0	0.0
<u>SPIO PETTIBONEAE</u>	11	1.711	0	0.0
<u>SPIOPLANES BOMBYX</u>	157	24.417	89	21.498
<u>STHENELAIS BOA</u>	0	0.0	1	0.242
 ARTHROPODA (CRUSTACEANS)				
AMPHIPODA				
<u>AMPELISCA ABDITA</u>	0	0.0	1	0.242
<u>AMPELISCA VERRILLI</u>	9	1.400	0	0.0
<u>LISTRIELLA SP.</u>	3	0.467	1	0.242
<u>MICROPROCTOPUS SP.</u>	0	0.0	1	0.242
<u>PROCTFAUSTORIUS SP.</u>	0	0.0	2	0.483
<u>PSEUDOFAUSTORIUS SP.</u>	1	0.156	0	0.0
<u>PSEUDOPLATYISCHNOPOUS SP.</u>	92	14.308	0	0.0
<u>SYNCFELIDIUM SP.</u>	4	0.622	2	0.483
BRACHYURA				
<u>METACRHRAPIS CALCARATA</u>	0	0.0	1	0.242
<u>PINNIXIA LUNZI</u>	1	0.156	0	0.0
<u>PINNIXIA SAYANA</u>	1	0.156	0	0.0
CARIDEA				
<u>PROCESSA HEMPHILLI</u>	1	0.156	0	0.0
CLIMACEA				
<u>CYCLAPSIS SP.</u>	1	0.156	1	0.242
<u>CYCLAPSIS VARIANS</u>	4	0.622	1	0.242
OSTRACODA				
<u>FALOCYTHERYDEA SEPTIPUNCTATA</u>	3	0.467	0	0.0
UNIDENTIFIED SP.	1	0.156	1	0.242
 ECHINODERMATA				
ASTEROIDEA (STARFISHES)				
<u>ASTROPECTEN ARTICULATUS</u>	1	0.156	2	0.483
OPHIURIDEA (BRITTLE STARS)				
UNIDENTIFIED SP.	0	0.0	1	0.242
 HEMICORDATA				
ENTEROPNEUSTA (ACORN WORMS)				
UNIDENTIFIED SP.	1	0.156	0	0.0
 CEPHALOCHORDATA (LANCETTS)				
<u>BRANCHIOSTOMA FLORIDAE</u>	2	0.311	3	0.725
 TOTALS				
NO. SPECIES		643		414
NO. IND. PER M2		55		54
S-H INDEX - H'(LN)		2572		1656
EVENNESS - J		2.7186		2.8260
		0.6784		0.7085

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL
 6/1/77

SPECIES	NO. OF TOTAL	IND. (C.)		NO. OF TOTAL	IND. (E.) PERCENT
		PERCENT			
NEMERTINEA (RIBBED WORMS) UNIDENTIFIED SP.	15	3.846		26	3.194
NEMATODA (ROUNDWORMS) UNIDENTIFIED SP.	4	0.810		0	0.0
PHORONIDA (PHORONIDS) <u>PHORONIS ARCHITECTA</u>	0	0.0		2	0.246
MOLLUSCA (SHELLFISH)					
GASTROPODA (SNAILS)					
CYLICINELLA BIDENTATA	2	0.405		1	0.123
DIASTOMA VARIUM	0	0.0		1	0.123
PELECYPODA (CLAMS)					
ANADARA FLRIDANA	0	0.0		1	0.123
CUMINGIA TELLINOIDES	0	0.0		4	0.491
LEPTIN SF.	0	0.0		57	7.002
LUCINA MULTILINEATA	16	3.239		33	4.054
MACTRA SP.	0	0.0		1	0.123
PITAR SIMPSONI	4	0.810		0	0.0
STRIGILLA MIRABILIS	1	0.202		0	0.0
TELLINA TEXANA	0	0.0		2	0.246
TELLINA VERSICOLOR	17	3.441		59	7.248
VENERIDAE UNIDENTIFIED SP.	0	0.0		3	0.369
ANNELIDA (SEGMENTED WORMS)					
CLIGCHAETA					
UNIDENTIFIED SP.	23	4.656		24	2.948
POLYCHAETA					
AMPHARETE ACUTIFRONS	0	0.0		1	0.123
APOPRIONOSPIO PYGMAEA	0	0.0		3	0.369
ARICIDEA FAUVELI	4	0.810		3	0.369
ARICIDEA FRAGILIS	1	0.202		2	0.246
ARMANDIA MACULATA	0	0.0		3	0.369
BRANIA WELLFLEETENSIS	1	0.202		0	0.0
CAPITELLA CAPITATA	0	0.0		1	0.123
CERATONEREIS IRRITABILIS	0	0.0		1	0.123
CERATONEREIS MIRABILIS	0	0.0		2	0.246
CHONE SP.	9	1.822		4	0.491
DIOPATRA CUPREA	0	0.0		11	1.351
DISPIO UNCINATA	0	0.0		4	0.491
EIEONE LACTEA	4	0.810		5	0.614
GLYCERA AMERICANA	12	2.429		14	1.720
GLYCERA DIBRANCHIATA	0	0.0		1	0.123
GLYCINDE SOLITARIA	0	0.0		3	0.369
GONIADA LITTOREA	3	0.607		0	0.0
GYPTIS VITTATA	0	0.0		1	0.123
HAPLOSCOLOPLOS FOLIOSUS	7	1.417		11	1.351
HAPLOSCOLOPLOS FRAGILIS	0	0.0		1	0.123
HARMO THOE LUNULATA	1	0.202		0	0.0
LUMBRINERIS CRUZENSIS	29	5.870		51	6.265
LUMBRINERIS TETRAURA	9	1.822		6	0.737
MAGELINA SP.	4	0.810		0	0.0
MEDICASTUS CALIFORNIENSIS	0	0.0		6	0.737
MINUSPIC CIRRIFERA	0	0.0		3	0.369
MYRICCHELE SP.	0	0.0		1	0.123
NEPHTYS BUCERA	10	2.024		0	0.0
NEPHTYS FICTA	99	20.040		150	18.428
NOTCASTUS HEMIPODUS	2	0.405		0	0.0
CNUPHIS EREMITA OCULATA	27	5.466		26	3.194

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL

6/1/77
(CONTINUED)

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
<u>ONOPHRIS PALLIDA</u>	1	0.202	0	0.0
<u>PARAONITES SPECIOSA</u>	1	0.202	0	0.0
<u>PARACNIDES LYRA</u>	6	1.215	6	0.737
<u>PARAPRIONOSPILO PINNATA</u>	0	0.0	27	3.317
<u>PHYLLODOCE ARENAE</u>	2	0.405	5	0.614
<u>PRIONOSPILO CRISTATA</u>	21	4.251	84	10.319
<u>RULLIERINEREIS MEXICANA</u>	5	1.012	1	0.123
<u>SCOLELEPIS TEXANA</u>	5	1.012	7	0.860
<u>SIGAMERA BASSI</u>	1	0.202	0	0.0
<u>SIGAMBRA TENTACULATA</u>	0	0.0	5	1.106
<u>SPIDIO PETTIBONEAE</u>	8	1.619	0	0.0
<u>SPIONOPHANES DOMOYX</u>	18	3.644	50	6.143
ARTHROPODA (CRUSTACEANS)				
AMPHIPODA				
<u>ACANTHOHAUSTORIUS SP.</u>	20	4.049	0	0.0
<u>AMPELISCA ABDITA</u>	0	0.0	2	0.369
<u>AMPELISCA VADORUM</u>	0	0.0	2	0.246
<u>AMPELISCA VERRILLI</u>	14	2.834	0	0.369
<u>ARGISSA SP.</u>	0	0.0	2	0.246
<u>LEPICASTYLUS SP.</u>	0	0.0	1	0.123
<u>LISTRIELLA SP.</u>	3	0.607	0	0.0
<u>LYSIANOPSTIS SP.</u>	1	0.202	1	0.123
<u>PROTOHAUSTORIUS SP.</u>	10	2.024	1	0.123
<u>PSEUDOAUSTORIUS SP.</u>	3	0.607	0	0.0
<u>PSEUDOPLATYPSCHNOPSIS SP.</u>	16	3.239	22	2.703
<u>SYNCFELIDIUM SP.</u>	9	1.822	4	0.491
ANOMURA				
<u>ALBUNEA PARETII</u>	0	0.0	1	0.123
BRACHYURA				
<u>CVALIFES CCELLATUS</u>	1	0.202	1	0.123
<u>PINNIXIA CYLINDRICA</u>	0	0.0	1	0.123
<u>PINNIXIA RETINENS</u>	2	0.405	1	0.123
<u>PINNIXIA SAYANA</u>	1	0.202	0	0.0
CARIDEA				
<u>PROCESSA HEMPHILLI</u>	2	0.405	5	0.614
CUMACEA				
<u>CYCLAPSIS SP.</u>	3	0.607	1	0.123
<u>CYCLAPSIS VARIANS</u>	9	1.822	10	1.229
<u>CYXYOSTYLIS SMITHI</u>	0	0.0	14	1.720
LEPTOSTRACA				
<u>NEBALIA SP.</u>	1	0.202	1	0.123
MYSIDACEA				
UNIDENTIFIED SP.	1	0.202	0	0.0
OSTRACOCA				
<u>SARSIELLA CHILDI</u>	0	0.0	1	0.123
PENAEIDEA				
<u>SICYCNIA BREVIROSTRIS</u>	0	0.0	1	0.123
ECHINODEMATA				
ASTEROIDEA (STARFISHES)				
<u>ASTRCPECTEN ARTICULATUS</u>	1	0.202	0	0.0
ECHINOIDEA (SAND DOLLARS; URCHINS)				
<u>LYTECHINUS VARIEGATUS</u>	1	0.202	0	0.0
<u>MELLITA QUINQUESPERFICRATA</u>	7	1.417	8	0.983
OPHIURIDEA (BRITTLE STARS)				
UNIDENTIFIED SP.	5	1.012	12	1.474
CEPHALOCHORDATA (LANCLETS)				
<u>BRANCHIOSTOMA FLORIDAE</u>	8	1.619	1	0.123

APPENDIX B (CONTINUED)

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL
6/1/77
(CONTINUED)

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
TOTALS	494		814	
NO. SPECIES	55		69	
NO. IND. PER M2	1976		3256	
S- _h INDEX - H'(LN)	3.3330		3.1985	
EVENNESS - J	0.8317		0.7554	

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL

7/5/77

SPECIES	NO. OF TOTAL	IND. (E.) PERCENT	NO. OF IND. (E.)	
			TOTAL	PERCENT
CNIDARIA				
ACTINIAE (SEA ANEMONES)				
UNIDENTIFIED SP.	0	0.0	1	0.204
PLATYHELMINTHES				
TURBELLARIA (FLATWORMS)				
UNIDENTIFIED SP.	3	0.368	0	0.0
NEMERTINEA (RIBBON WORMS)				
UNIDENTIFIED SP.	25	3.064	15	3.055
NEMATODA (ROUNDWORMS)				
UNIDENTIFIED SP.	5	0.613	0	0.0
MOLLUSCA (SHELLFISH)				
GASTROPODA (SNAILS)				
ACTEOCINA CANDEI	28	3.431	0	0.0
CYLICHNELLA BIDENTATA	0	0.0	1	0.204
NATICA PUSILLA	0	0.0	1	0.204
POLINICES DUPLICATUS	0	0.0	1	0.204
PELECYPODA (CLAMS)				
LAEVICARDIUM MORTONI	1	0.123	0	0.0
LEPTIC SP.	10	1.225	0	0.0
LUCINA MULTILINEATA	73	8.946	25	5.092
MACROCALLISTA MACULATA	2	0.245	0	0.0
PERIPLOMA MARGARITACEUM	3	0.368	0	0.0
TELLINA AEQUISTRIGATA	3	0.368	2	0.407
TELLINA TEXANA	14	1.716	14	2.851
TELLINA VERSICOLOR	81	9.926	58	11.813
VENERIDA UNIDENTIFIED SP.	2	0.245	0	0.0
ANNELIDA (SEGMENTED WORMS)				
CLIGUCHETA				
UNIDENTIFIED SP.	14	1.716	1	0.204
POLYCHAETA				
APOPHIONOSPPIO PYGMAEA	2	0.245	2	0.407
ARICIDEA CERRUTI	0	0.0	1	0.204
ARICIDEA FAUVELI	3	0.368	6	1.222
ARICIDEA FRAGILIS	4	0.490	2	0.407
ARICIDEA SUECICA	0	0.0	1	0.204
ARMANDIA AGILIS	0	0.0	2	0.407
ARMANDIA MACULATA	0	0.0	1	0.204
CERATONEREIS IRRITABILIS	0	0.0	1	0.204
CHONE SP.	14	1.716	3	0.611
CIRRIPHORUS LYRIFORMIS	0	0.0	1	0.204
DISPOUNCINATA	0	0.0	3	0.611
ETEONE LACTEA	5	0.613	1	0.204
GLYCERA AMERICANA	41	5.025	16	3.259
GLYCERA DIBRANCHIATA	0	0.0	1	0.204
GONIADA LITTOREA	8	0.980	11	2.240
GRUDEULEPIS MEXICANA	1	0.123	0	0.0
GYPSIUS VITTATA	1	0.123	0	0.0
HAPLCSCOLOPLOS FOLIOSUS	6	0.735	1	0.204
HAPLCSCOLOPLOS FRAGILIS	1	0.123	0	0.0
LUMBRINERIS CRUZENSIS	154	18.873	90	18.330
LUMBRINERIS TETRAURA	24	2.941	1	0.204
MEDICOMASTUS CALIFORNiensis	3	0.368	1	0.204
MICROCPHTHALMUS SP.	2	0.245	0	0.0
NEPHIYS BUCERA	2	0.245	0	0.0
NEPHIYS PICTA	112	13.725	129	26.273

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL
 7/5/77
 (CONTINUED)

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
<u>NOTOMASTUS HEMIPODUS</u>	2	0.245	1	0.204
<u>ONUPHIS EREMITA OCULATA</u>	22	2.696	10	2.037
<u>OWENIA FUSIFORMIS</u>	9	1.103	0	0.0
<u>PARANAITES SPECIOSA</u>	1	0.123	0	0.0
<u>PARACNIDES LYRA</u>	10	1.225	26	5.295
<u>PARACNIDES FULGENS</u>	3	0.368	0	0.0
<u>PARAPRIONOSPIG PINNATA</u>	2	0.245	8	1.629
<u>PHYLLODOCE ARENAE</u>	2	0.245	2	0.407
<u>PRIONOSPIG CRISTATA</u>	13	1.593	5	1.018
<u>RULLIERINEREIS MEXICANA</u>	1	0.123	0	0.0
<u>SCOLELEPIS TEXANA</u>	1	0.123	0	0.0
<u>SCOLOPLOS RUBRA</u>	2	0.245	0	0.0
<u>SIGALIKA ARENICOLA</u>	1	0.123	0	0.0
<u>SPICIFHARES BLOMEYX</u>	1	0.123	13	2.648
 SIPUNCULIDA (PEANUT WORMS)				
<u>UNIDENTIFIED SP.</u>	1	0.123	0	0.0
 ARTHROPODA (CRUSTACEANS)				
<u>AMPHIPODA</u>				
<u>ACANTHOCHAUSTORIUS SP.</u>	1	0.123	0	0.0
<u>AMPELISCA VADOURUM</u>	1	0.123	0	0.0
<u>AMPELISCA VERRILLI</u>	9	1.103	7	1.426
<u>ARGISSA SP.</u>	1	0.123	0	0.0
<u>LISTRIELLA SP.</u>	4	0.490	2	0.407
<u>MICRCRPROTOPUS SP.</u>	3	0.368	0	0.0
<u>MONOCULODES SP.</u>	1	0.123	0	0.0
<u>PSEUCOPLATYISCHNOPUS SP.</u>	22	2.696	1	0.204
<u>SYNCHELIDIUM SP.</u>	21	2.574	0	0.0
<u>UNIDENTIFIED SP.</u>	1	0.123	0	0.0
<u>AMMURA</u>				
<u>ALBUNEA PARETII</u>	0	0.0	1	0.204
<u>BRACHYURA</u>				
<u>PINNIXIA CHAETOPTERANA</u>	1	0.123	0	0.0
<u>PINNIXIA RETINENS</u>	3	0.368	0	0.0
<u>CARIDEA</u>				
<u>OGYRIDES ALPHAEOSTRIS</u>	0	0.0	1	0.204
<u>SYNALPHEUS SP.</u>	0	0.0	1	0.204
<u>CUMACEA</u>				
<u>CYCLAFSIS SP.</u>	2	0.245	0	0.0
<u>CYCLAFSIS VARIANS</u>	15	1.838	4	0.815
<u>OXYURESTYLIS SMITHI</u>	0	0.0	2	0.407
<u>PEMSEA</u>				
<u>PENAEUS DUORARUM</u>	1	0.123	2	0.407
 ECHINODERMATA				
<u>ASTEROIDEA (STARFISHES)</u>				
<u>ASTRPECTEN ARTICULATUS</u>	0	0.0	1	0.204
<u>ECFINOIDEA (SAND DOLLARS; URCHINS)</u>				
<u>MELLITA GUINQUESPERCRATA</u>	2	0.245	0	0.0
<u>HOLCOTHURIDEA (SEA CUCUMBERS)</u>				
<u>LEPTOSYNTAPTA SP.</u>	0	0.0	10	2.037
<u>OPHTHURIDEA (BRITTLE STARS)</u>				
<u>UNIDENTIFIED SP.</u>	0	0.0	1	0.204
 HEMICORDATA				
<u>ENTEROPNEUSTA (ACRON WORMS)</u>				
<u>UNIDENTIFIED SP.</u>	2	0.245	0	0.0
 CEPHALOCHORDATA (LANCELETS)				
<u>BRANCHIOSTOMA FLORIDA</u>	98	0.980	0	0.0

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL

7/5/77
(CONTINUED)

SPECIES

	NO. OF IND. (C.)	NO. OF IND. (E.)
	TOTAL PERCENT	TOTAL PERCENT

TOTALS	816	491
NO. SPECIES	64	49
NO. IND. PER M2	3264	1964
S-W INDEX - H'(LN)	3.0767	2.6678
EVENNESS - J	0.7398	0.6255

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL
 8/2/77

SPECIES	NO. OF TOTAL	IND. (C.) PERCENT	NO. OF IND. (E.)		PERCENT
			TOTAL	PERCENT	
CNICARIA ACTINIAFIA (SEA ANEMONES) UNIDENTIFIED SP.	0	0.0	1	0.137	
PLATYHELMINTHES TURBELLARIA (FLATWORMS) UNIDENTIFIED SP.	11	0.851	3	0.411	
NEMERTINEA (RIBBON WORMS) UNIDENTIFIED SP.	33	2.554	16	2.192	
BRACHIOPODA (LAMP SHELLS) <u>GLOTTIDIA PYRAMIDATA</u>	3	0.232	0	0.0	
MOLLUSCA (SHELLFISH) GASTROPODA (SNAILS)					
<u>ACTECCINA CANDEI</u>	9	0.697	8	1.096	
<u>CYLICHNELLA BIDENTATA</u>	0	0.0	73	10.000	
<u>DIASTOMA VARIUM</u>	24	1.858	0	0.0	
<u>NATICA PUSILLA</u>	10	0.774	2	0.274	
<u>POLINICES DUPLICATUS</u>	1	0.077	0	0.0	
<u>TEREERA DISLOCATA</u>	1	0.077	0	0.0	
<u>TURBCNILLA CONRADII</u>	3	0.232	1	0.137	
PELCYPODA (CLAMS)					
<u>ANADARA FLORICANA</u>	0	0.0	3	0.411	
<u>ERVILLA CONCENTRICA</u>	26	2.012	0	0.0	
<u>LUCINA MULTILINEATA</u>	31	2.399	15	2.055	
<u>NUCULANA ACUTA</u>	0	0.0	6	0.822	
<u>TELLINA AEQUISTRATA</u>	6	0.464	5	0.685	
<u>TELLINA TAMPAENSIS</u>	1	0.077	9	1.233	
<u>TELLINA TEXANA</u>	0	0.0	6	0.822	
<u>TELLINA VERSICOLOR</u>	180	13.932	102	13.973	
<u>TRACHYCARDIUM MURICATUM</u>	4	0.310	1	0.137	
ANNELIDA (SEGMENTED WORMS)					
OLIGOCHAETA					
UNIDENTIFIED SP.	18	1.393	0	0.0	
PELYCHAETA					
<u>APOPRIONOSPILO PYGMAEA</u>	3	0.232	1	0.137	
<u>ARICIDEA CERRUTI</u>	0	0.077	0	0.0	
<u>ARICIDEA FRAGILIS</u>	3	0.232	0	0.0	
<u>ARMANDIA MACULATA</u>	12	0.929	3	0.411	
<u>BRANCHIOASYCHIS AMERICANA</u>	0	0.0	5	0.685	
<u>CERATONEEREIS IRRITABILIS</u>	2	0.155	18	2.466	
<u>CHONE SP.</u>	31	2.399	0	0.0	
<u>CISTENIDES GOULDII</u>	0	0.0	1	0.137	
<u>DIOPATRA CLPREA</u>	0	0.0	33	4.521	
<u>DORVILLEA SOCIAIRILIS</u>	3	0.232	0	0.0	
<u>ENOPLOBRANCHUS SANGUINEUS</u>	1	0.077	0	0.0	
<u>ETEONE LACTEA</u>	9	0.697	0	0.0	
<u>GLYCERA AMERICANA</u>	35	2.709	0	0.0	
<u>GLYCERA DIBRANCHIATA</u>	7	0.542	4	0.548	
<u>GLYCINA SOLITARIA</u>	0	0.0	4	0.548	
<u>GOONIADA LITTOREA</u>	10	0.774	1	0.137	
<u>GYPIIS BREVIPALPA</u>	4	0.310	0	0.0	
<u>HAPLOCSCLOPLOS FRAGILIS</u>	1	0.077	0	0.0	
<u>HARMOIOE IMBRICATA</u>	0	0.0	1	0.137	
<u>LOIMIA MEDUSA</u>	3	0.232	3	0.411	
<u>LUMBRINERIS CRUZENSIS</u>	373	28.870	8	1.096	
<u>LUMBRINERIS TETRAURA</u>	21	1.625	1	0.137	

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL

E/2/77

(CONTINUED)

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
<u>MAGELCNA LONGICORNIS</u>	0	0.0	2	0.274
<u>MEDiomastus CALIFORNIENSIS</u>	0	0.0	10	1.370
<u>MESOCHAETOPTERUS SAGITTARIUS</u>	10	0.774	24	3.288
<u>MINUSPIO CIRRIFERA</u>	0	0.0	3	0.411
<u>NEANTES SUCCINEA</u>	0	0.0	14	1.918
<u>NEPHIYS BUCERA</u>	4	0.310	0	0.0
<u>NEPHIYS PICTA</u>	65	5.031	7	0.959
<u>NEREIS SP.</u>	0	0.0	1	0.137
<u>NOTOMASTUS HEMIPODUS</u>	4	0.310	3	0.411
<u>ONUPHIS EREMITA OCULATA</u>	16	1.238	4	0.548
<u>OWENIA FUSIFORMIS</u>	1	0.077	1	0.137
<u>PARACNIDES LYRA</u>	15	1.161	2	0.274
<u>PARACNIDES FULGENS</u>	4	0.310	0	0.0
<u>PARAPRIONOSPIO PINNATA</u>	0	0.0	11	1.507
<u>PHYLLODOCE ARENAE</u>	9	0.697	4	0.548
<u>POLYDORA SOCIALIS</u>	0	0.0	2	0.274
<u>POLYDORA TETRABRANCHIA</u>	1	0.077	0	0.0
<u>PRIONOSPIO CRISTATA</u>	96	7.430	75	10.274
<u>PSEUDEURYTHOE AMBIGUA</u>	1	0.077	0	0.0
<u>RULLIERINEREIS MEXICANA</u>	2	0.155	1	0.137
<u>SIGAMBRA BASSI</u>	1	0.077	0	0.0
<u>SIGAMBRA TENTACULATA</u>	2	0.155	109	14.932
<u>SPIO PETTIBONEAE</u>	6	0.464	0	0.0
<u>SPIOPHANES BOMBYX</u>	6	0.464	0	0.0
<u>STHENELAIS BOA</u>	0	0.0	3	0.411
<u>STREPISYLLIS ARENAE</u>	1	0.077	0	0.0
 SIPUNCULICHA (PEANUT WORMS)				
UNIDENTIFIED SP.	1	0.077	1	0.137
 ECHIURIDA (ECHIURIDS)				
UNIDENTIFIED SP.	0	0.0	3	0.411
 ARTHROPODA (CRUSTACEANS)				
AMPHIPODA				
<u>ACANTHOHAUSTORIUS SP.</u>	1	0.077	0	0.0
<u>AMPELISCA VERRILLI</u>	46	3.560	9	1.233
<u>ERICHTHONIUS SP.</u>	1	0.077	2	0.274
<u>LISTRIELLA SP.</u>	0	0.0	2	0.274
<u>PSEUDOPLATYTSCHNOPLYS SP.</u>	20	1.548	1	0.137
<u>SYNCFELIDIUM SP.</u>	20	1.548	8	1.096
ANOMURA				
<u>ALBUNEA PARETII</u>	2	0.155	0	0.0
ERACHYURA				
<u>CSACHILA TUBEFOSA</u>	2	0.155	0	0.0
<u>FANCFEUS HERESTII</u>	0	0.0	8	1.096
<u>PINNIXIA RETINENS</u>	2	0.155	0	0.0
<u>PINNIXIA SP.</u>	0	0.0	2	0.274
<u>PINNCTHERES OSTREUM</u>	1	0.077	0	0.0
<u>PORTUNUS SAYI</u>	0	0.0	6	0.822
CALLIANASSIDAE				
<u>CALLIANASSA JAMAICENSE</u>	1	0.077	1	0.137
CARTIDEA				
<u>LATREUTES PARVULUS</u>	0	0.0	3	0.411
<u>PROCESSEA HEMPHILLI</u>	6	0.464	4	0.548
CUMACEA				
<u>CYCLAFSIS SP.</u>	6	0.464	1	0.137
<u>CYCLAFSIS VARIANS</u>	8	0.619	9	1.233
<u>CYXYURGSTYLIS SMITHI</u>	9	0.697	1	0.137
ISCPDA				
<u>APANTHURA MAGNIFICA</u>	1	0.077	0	0.0

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL

8/2/77
(CONTINUED)

SPECIES	NO. OF TOTAL	IND. (C.) PER CENT	NO. OF IND. (E.) TOTAL PER CENT	
			IND. (C.)	IND. (E.)
LEPTOSTRACA				
<u>NEBALIA SP.</u>	8	0.619	2	0.274
MYSIACEA				
<u>MYSIOPSIS BIGELOWI</u>	3	0.232	0	0.0
OSTRACODA				
UNIDENTIFIED SP.	4	0.310	7	0.959
PENAEIDAE				
<u>ACETES AMERICANUS</u>	2	0.155	0	0.0
<u>SICYONIA SP.</u>	1	0.077	1	0.137
<u>TRACHYPENAEUS CONSTRICTUS</u>	0	0.0	11	1.507
ECHINODERMATA				
ECHINCIDEA (SAND DOLLARS; URCHINS)				
<u>LYTECHINUS VARIEGATUS</u>	2	0.155	0	0.0
<u>MOTRA ATROPS</u>	2	0.155	34	4.658
HOLOTHUROIDEA (SEA CUCUMBERS)				
<u>LEPTOCYANPA SP.</u>	4	0.310	2	0.274
OPHIURCIDEA (BRITTLE STARS)				
<u>HEMIPHOLIS ELONGATA</u>	0	0.0	1	0.137
<u>MICROPHOLIS GRACILLIMA</u>	2	0.155	0	0.0
<u>OPHIOPHRAGMUS WURDEMANI</u>	1	0.077	0	0.0
HEMICORDATA				
ENTEROPNEUSTA (ACORN WORMS)				
UNIDENTIFIED SP.	1	0.077	1	0.137
CEPHALOCHORDATA (LANCELETS)				
<u>BRANCHIOSTOMA FLORIDAE</u>	10	0.774	0	0.0
VERTEBRATA				
PISCES (FISHES)				
<u>GOBIIDAE, UNIDENTIFIED SP.</u>	1	0.077	0	0.0
TOTALS	1292		730	
NO. SPECIES		80		70
NO. IND. PER M ²		5168		2920
S-W INDEX - H ² (LN)		3.0096		3.2331
EVENNESS - J		0.6868		0.7610

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL
9/1/77

SPECIES	NO. OF IND.	TOTAL	PERCENT	NO. OF IND.	TOTAL	PERCENT
CNICARIA						
ACTINIANARIA (SEA ANEMONES)						
UNIDENTIFIED SP.	1	0.112		2	1.818	
PLATYHELMINTHES						
TURBELLARIA (FLATWORMS)						
UNIDENTIFIED SP.	1	0.112		0	0.0	
NEMERTINEA (RIBBON WORMS)						
UNIDENTIFIED SP.	26	2.912		5	4.545	
NEMATODA (ROUNDWORMS)						
UNIDENTIFIED SP.	5	0.560		0	0.0	
MOLLUSCA (SHELLFISH)						
GASTROPODA (SNAILS)						
ACTEOCINA CANDEI	4	0.448		0	0.0	
ANACIS FLORIDANA	3	0.336		0	0.0	
CYLICHNELLA BIDENTATA	3	0.336		0	0.0	
DIASTOMA VARIUM	116	12.990		0	0.0	
NASSARIA ACUTUS	0	0.0		9	8.182	
NATICA PUSILLA	4	0.448		2	1.818	
TEREBRA DISLOCATA	4	0.448		2	1.818	
TURBONILLA CONRADII	1	0.112		0	0.0	
PELECYPODA (CLAMS)						
ANADARA FLORIDANA	0	0.0		1	0.909	
ERVILIA CONCENTRICA	28	3.135		0	0.0	
LUCINA MULTILINEATA	9	1.008		0	0.0	
NUCULANA ACUTA	0	0.0		1	0.909	
PERIPLCMIA MARGARITACEUM	15	1.680		0	0.0	
TELLINA AEQUISTRIGATA	4	0.448		0	0.0	
TELLINA TEXANA	6	0.672		7	6.364	
TELLINA VERSICOLOR	138	15.454		13	11.818	
ANNELIDA (SEGMENTED WORMS)						
OLIGOCHAETA						
UNIDENTIFIED SP.	18	2.016		1	0.909	
POLYCHAETA						
AGLAECHEMUS VERRILLI	1	0.112		0	0.0	
APOPRONCSPIO PYGMAEA	2	0.224		1	0.909	
ARICICEA FAUVELI	4	0.448		0	0.0	
ARICICEA FRAGILIS	2	0.224		0	0.0	
ARICICEA SUECICA	1	0.112		0	0.0	
ARMANCIA AGILIS	1	0.112		0	0.0	
BRANIA WELLFLEETENSIS	3	0.336		0	0.0	
CAPITELLA CAPITATA	0	0.0		1	0.909	
CAULERIELLA SP.	1	0.112		0	0.0	
CERATONEREIS IRRITABILIS	0	0.0		4	3.636	
CHONE SP.	13	1.456		0	0.0	
DIOMATRA CUPREA	0	0.0		3	2.727	
DRIESCHIA PELLUCIDA	0	0.0		1	0.909	
ETONE LACTEA	3	0.336		0	0.0	
GLYCERA AMERICANA	3	0.336		0	0.0	
GLYCERA DIBRANCHIATA	10	1.120		2	1.818	
GLYCINDE SOLITARIA	0	0.0		1	0.909	
GCNIACA LITTICREA	7	0.784		0	0.0	
HAPLISCCICPLCS FOLIOSUS	2	0.224		0	0.0	
LCINIA VIRIDIS	1	0.112		0	0.0	
LUMBFINERIS CRUZENSIS	252	28.219		1	0.909	
LUMBFINERIS TETRAURA	8	0.896		0	0.0	

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL

9/1/77
(CONTINUED)

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
<u>MEDICMASTUS CALIFORNIENSIS</u>	1	0.112	0	0.0
<u>MESOCRAEOPTERUS SAGITTARIUS</u>	1	0.112	0	0.0
<u>NEANthes ACUMINATA</u>	1	0.112	0	0.0
<u>NEANthes SUCCINEA</u>	0	0.0	1	0.909
<u>NEPHYTIS PICTA</u>	14	1.568	1	0.909
<u>NOTOMASTUS HEMIPODUS</u>	5	0.560	1	0.909
<u>ONUPHIS EREMITA OCULATA</u>	22	2.464	1	0.909
<u>OWENIA FLUIFORMIS</u>	1	0.112	0	0.0
<u>PARACNIDES LYRA</u>	25	2.800	0	0.0
<u>PARAFRICNCSPIG PINNATA</u>	0	0.0	5	4.545
<u>PHYLLOCOCCE ARENAE</u>	6	0.672	0	0.0
<u>FRICNCSPIG CRISTATA</u>	2	0.224	0	0.0
<u>FSEUDEURYTHOE AMBIGUA</u>	1	0.112	0	0.0
<u>RULLIERINE REIS MEXICANA</u>	10	1.120	2	1.818
<u>SCCLELEFIS TEXANA</u>	3	0.336	0	0.0
<u>SIGAMERA BASSI</u>	1	0.112	0	0.0
<u>SIGAMERA TENTACULATA</u>	0	0.0	1	0.909
<u>SPIDOPHANES BOMBYX</u>	1	0.112	0	0.0
 SIPUNCULIDA (PEANUT WORMS)				
<u>GOLFINGIA TRICHOCEPHALA</u>	1	0.112	0	0.0
 ARTHROPODA (CRUSTACEANS)				
AMPHIPODA				
<u>ACANTHOHAUSTORIUS SP.</u>	3	0.336	0	0.0
<u>AMPELISCA VERRILLI</u>	6	0.672	0	0.0
<u>LEPIACTYLUS SP.</u>	2	0.224	0	0.0
<u>LISTRIELLA SP.</u>	1	0.112	0	0.0
<u>PSUCOPLATYTSCHNOPUS SP.</u>	28	3.135	0	0.0
<u>SYNCFELIDIUM SP.</u>	13	1.456	0	0.0
ANCRURA				
<u>ALBUNEA PARETII</u>	2	0.224	0	0.0
<u>PAGURUS LONGICARPUS</u>	5	0.560	0	0.0
BRACHYURA				
<u>PINNIXIA SAYANA</u>	0	0.0	1	0.909
CUMACEA				
<u>CYCLAPSIS SP.</u>	2	0.224	0	0.0
<u>CYCLAPSIS VARIANS</u>	14	1.568	0	0.0
ISCOPDA				
<u>EDOTEA MONTOSA</u>	1	0.112	0	0.0
mysidacea				
<u>BOWMANIELLA SP.</u>	0	0.0	2	1.818
<u>MYSIDOPSIS BIGELOWI</u>	0	0.0	2	1.818
UNIDENTIFIED SP.	1	0.112	0	0.0
OSTRACODA				
UNIDENTIFIED SP.	1	0.112	0	0.0
PEAIDEA				
<u>ACETES AMERICANUS</u>	0	0.0	2	1.818
 ECHINODERMATA				
ECHINOIDEA (SAND DOLLARS; URCHINS)				
<u>MOIRA ATROPIS</u>	1	0.112	0	0.0
<u>MELLITA GUINQUESPERFORATA</u>	6	0.672	0	0.0
HCLOTHURIDEA (SEA CUCUMBERS)				
<u>LEPTOSYNAPTA SP.</u>	0	0.0	1	0.909
OPHIURIDEA (BRITTLE STARS)				
<u>HEMIPIOLIS ELONGATA</u>	0	0.0	28	25.455
<u>MICROPHOLIS GRACILLIMA</u>	3	0.336	0	0.0
 HEMICHORDATA				
ENTEROPNEUSTA (ACRON WORMS)				

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL
 9/1/77
 (CONTINUED)

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
UNIDENTIFIED SP.	1	0.112	5	4.545
CEPHALOCHORDATA (LANCELETS) <u>BRANCHIOSTOMA FLORIDAEE</u>	6	0.672	0	0.0
VERTEBRATA PISCES (FISHES) <u>SYMPHURUS SP.</u>	2	0.224	0	0.0
TOTALS	893		110	
NO. SPECIES	70		32	
NO. IND. PER M ²	3572		440	
S-W INDEX - H ¹ (LN)	2.8562		2.8449	
EVENNESS - J	C.6723		0.8209	

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL
10/3/77

SPECIES	NO. OF IND.	TOTAL	PERCENT	NO. OF IND.	TOTAL	PERCENT
CNIDARIA ACTINIARIA (SEA ANEMONES) UNIDENTIFIED SP.	2	0.379		2	0.504	
PLATYHELMINTHES TURBELLARIA (FLATWORMS) UNIDENTIFIED SP.	2	0.379		4	1.008	
NEMERTINEA (RIBBON WORMS) UNIDENTIFIED SP.	17	3.220		13	3.275	
NEMATODA (ROUNDWORMS) UNIDENTIFIED SP.	4	0.758		1	0.252	
PHORONIDA (PHORONIDS) PHORONIS ARCHITECTA	0	0.0		1	0.252	
MOLLUSCA (SHELLFISH)						
GASTROPODA (SNAILS)						
ACTECCINA CANDEI	0	0.0		1	0.252	
NASSARIUS ACUTUS	0	0.0		8	2.015	
NATICA PUSILLA	1	0.189		0	0.0	
TURBONILLA CONRADII	0	0.0		1	0.252	
PELECYPODA (CLAMS)						
CHIONA CANCELLATA	1	0.189		0	0.0	
ERVILIA CONCENTRICA	17	3.220		2	0.504	
LUCINA MULTILINEATA	6	1.136		16	4.030	
PERIPLOMA MARGARITACEUM	2	0.379		6	1.511	
TELLINA AEQUISTRIGATA	0	0.0		1	0.252	
TELLINA TEXANA	8	1.515		0	0.0	
TELLINA VERSICOLOR	39	7.386		32	8.060	
TRACHYCARDIUM MURICATUM	1	0.189		0	0.0	
ANNELEIDA (SEGMENTED WORMS)						
OLIGOCHAETA						
UNIDENTIFIED SP.	24	4.545		12	3.023	
POLYCHAETA						
APICPRICACSPIO PYGMAEA	1	0.189		1	0.252	
ARICIDEA FRAGILIS	0	0.0		1	0.252	
ARICIDEA SUECICA	3	0.568		1	0.252	
ARMANDIA AGILIS	1	0.189		0	0.0	
ARMANDIA MACULATA	1	0.189		1	0.252	
ERANIA WELLFLEETENSIS	3	0.568		0	0.0	
CERATONEREIS IRRITABILIS	0	0.0		1	0.252	
CHONE SP.	7	1.326		5	1.259	
ETEONE LACTEA	2	0.379		9	2.267	
GLYCERA AMERICANA	1	0.189		5	1.259	
GLYCERA DIDRANCHIATA	0	0.0		12	3.023	
GONIADA LITOREA	11	2.083		5	1.259	
GRUBEULEPIS MEXICANA	1	0.189		0	0.0	
HAPLOCYCLOPODS FOLIOSUS	6	1.136		3	0.756	
LUMBRINERIS CRUZENSIS	207	39.205		107	26.952	
LUMBRINERIS TETRAURA	6	1.136		27	6.801	
MEDICMASTUS CALIFORNIENSIS	0	0.0		1	0.252	
MESOCIAEPTERUS SAGITTARIUS	1	0.189		4	1.008	
NEANTHEES ACUMINATA	2	0.379		0	0.0	
NEANTHEES SUCCINEA	1	0.189		0	0.0	
NEPHTYS PICTA	15	2.841		4	1.008	
NOTOMASTUS HEMIPODUS	0	0.0		2	0.504	
ONUPHIS EREMITA OCULATA	4	0.758		6	1.511	

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL

10/3/77

(CONTINUED)

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
<u>PARANITES SPECIOSA</u>	1	0.189	0	0.0
<u>PARACNIDES LYRA</u>	18	3.409	25	6.297
<u>PARACNIS FULGENS</u>	1	0.189	0	0.0
<u>PARAPRIONOSPIG PINNATA</u>	1	0.189	0	0.0
<u>PHYLLODOCE ARENAE</u>	2	0.379	1	0.252
<u>PRIONOSPIG CRISTATA</u>	6	1.136	2	0.504
<u>RULLIERINERIS MEXICANA</u>	11	2.083	5	1.259
<u>SCOLELEPIS TEXANA</u>	0	0.0	1	0.252
<u>SCOLECOPLOS RUBRA</u>	0	0.0	2	0.504
<u>SIGAMERA BASSI</u>	2	0.379	0	0.0
<u>SPICOPETTIBONEAE</u>	4	0.758	1	0.252
<u>SPICOFALIPIERUS OCULATUS</u>	7	1.326	1	0.252
 SIPUNCULIDA (PEANUT WORMS)				
UNIDENTIFIED SP.	2	0.379	1	0.252
 ARTHROPODA (CRUSTACEANS)				
AMPHIPODA				
<u>ACANTHOCHAUSTORIUS SP.</u>	3	0.568	0	0.0
<u>AMPELISCA VERRILLI</u>	2	0.379	1	0.252
<u>GITANOPSEIS SP.</u>	1	0.189	0	0.0
<u>LEPIDACTYLUS SP.</u>	14	2.652	1	0.252
<u>LISTRIELLA SP.</u>	2	0.379	2	0.504
<u>PSEUDOPLATYIS SCHNOPIUS SP.</u>	16	3.030	19	4.786
<u>SYNCHELIDIUM SP.</u>	4	0.758	7	1.763
ANOMURA				
<u>ALBLINEA PARETII</u>	0	0.0	1	0.252
<u>PAGURIS LONGICARPUS</u>	3	0.568	3	0.756
BRACHYURA				
<u>PINNIXIA SAYANA</u>	0	0.0	1	0.252
<u>PINNOTHERES OSTREUM</u>	3	0.568	0	0.0
CARIDEA				
<u>PROCESSA EMMILLI</u>	1	0.189	1	0.252
CUMACEA				
<u>CYCLAFSIS SP.</u>	4	0.758	7	1.763
<u>CYCLAFSIS VARIANS</u>	2	0.379	2	0.504
<u>OXYURECSTYLIS SMITHI</u>	1	0.189	2	0.504
<u>SPILOCUMA SALCMANI</u>	0	0.0	1	0.252
MYSTACACEA				
<u>MYSIDOPSIS BIGELOWI</u>	2	0.379	2	0.504
OSTRACODA				
UNIDENTIFIED SP.	1	0.189	0	0.0
PEMIDEA				
<u>LUCIFER FAXONI</u>	1	0.189	1	0.252
<u>TRACHYPENAEUS CONSTRICTUS</u>	1	0.189	2	0.504
 ECHINODERMATA				
ECHINOIDEA (SAND DOLLARS; URCHINS)				
<u>MOIRA ATROPS</u>	2	0.379	0	0.0
OPHIURICIDEA (BRITTLE STARS)				
<u>HENIFHCLIS ELEGANTATA</u>	0	0.0	1	0.252
<u>MICROPHCLIS GRACILIMA</u>	7	1.326	5	1.259
<u>CPHICPHAGNUS WURDEMANI</u>	1	0.189	0	0.0
UNIDENTIFIED SP.	2	0.379	1	0.252
 CEPHALOCHORDATA (LANCELETS)				
ERANCHIOSTOMA FLORIDAE	3	0.568	3	0.756

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL

10/3/77
(CONTINUED)

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
TOTALS				
NO. SPECIES	528	64	397	61
NO. IND. PER M2		2112		1588
S-W INDEX - H'(LN)		2.8345		3.1138
EVENNESS - J		0.6815		0.7575

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL
11/1/77

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
CNIDARIA				
ACTINIARIA (SEA ANEMONES)				
UNIDENTIFIED SP.	0	0.0	1	0.328
PLATYHELMINTHES				
TURBELLARIA (FLATWORMS)				
UNIDENTIFIED SP.	2	0.275	1	0.328
NEMERTINEA (RIBBON WORMS)				
UNIDENTIFIED SP.	29	3.994	27	8.852
PHORONIDA (PHORONIDS)				
<u>PHORENIS ARCHITECTA</u>	1	0.138	0	0.0
MOLLUSCA (SHELLFISH)				
GASTROPODA (SNAILS)				
<u>NAASSARIS ACUTUS</u>	4	0.551	4	1.311
<u>NATICA FUSILLA</u>	1	0.138	1	0.328
<u>OLIVA SAYANA</u>	0	0.0	1	0.328
<u>OLIVELLA MUTICA</u>	4	0.551	0	0.0
<u>TEREBRA DISLOCATA</u>	4	0.551	1	0.328
<u>TURBACILLA CCRNADI</u>	3	0.413	0	0.0
PELECYPODA (CLAMS)				
<u>CHIONE CANCELLATA</u>	0	0.0	2	0.656
<u>DIPLODONTA SEMIASPERA</u>	1	0.138	0	0.0
<u>ERVILIA CONCENTRICA</u>	4	0.551	0	0.0
<u>LUCINA MULTILINEATA</u>	10	1.377	5	1.639
<u>NUCULANA ACUTA</u>	0	0.0	1	0.328
<u>PERIPLEMMA MARGARITACEUM</u>	10	1.377	0	0.0
<u>TELLIDORA CRISTATA</u>	1	0.138	0	0.0
<u>TELLINA IRIS</u>	0	0.0	3	0.984
<u>TELLINA TEXANA</u>	1	0.138	0	0.0
<u>TELLINA VERSICOLOR</u>	29	3.994	6	1.967
ANNELIDA (SEGMENTED WORMS)				
CLIGGCHAETA				
UNIDENTIFIED SP.	19	2.617	4	1.311
POLYCHAETA				
ANTINCE SP.	1	0.138	1	0.328
ARICIDEA FAUVELI	0	0.0	1	0.328
ARICIDEA FRAGILIS	3	0.413	6	1.967
ARICIDEA PHILIPINAE	1	0.138	0	0.0
ARMANDIA MACULATA	7	0.964	0	0.0
CAULLERIELLA SP.	1	0.138	0	0.0
CHAE TOZONE SETOSA	1	0.138	0	0.0
CHLOEDEIA VIRIDIS	1	0.138	0	0.0
CHONE SP.	10	1.377	1	0.328
CISTENIDES GOULDII	1	0.138	0	0.0
EITEONE LACTEA	13	1.791	1	0.328
EULALIA SANGUINEA	0	0.0	1	0.328
GLYCERA AMERICANA	8	1.102	2	0.656
GLYCERA DIBRANCHIATA	2	0.275	25	8.197
GOANIADA LITTICREA	4	0.551	2	0.656
GRUBEULEFIS MEXICANA	1	0.138	0	0.0
GYPTIS BREVIPALPA	1	0.138	0	0.0
HAPLOCYCLOPS FOLIOSUS	2	0.275	0	0.0
HARMOTHICE LUNULATA	0	0.0	1	0.328
LUMBFINERIS CRUZENSIS	235	32.369	47	15.410
LUMBFINERIS TETRAURA	20	2.755	3	0.984
MAGELINA RIOJAI	0	0.0	1	0.328

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL

11/1/77
(CONTINUED)

SPECIES	NO. OF TOTAL	IND. (%) PERCENT	NO. OF TOTAL		IND. (%) PERCENT
			CF	INC.	
<u>MEDOMASTIS CALIFORNIENSIS</u>	1	0.138	2	0.656	
<u>NEANTHES SUCCINEA</u>	2	0.275	0	0.0	
<u>NEPHYS PICTA</u>	11	1.515	7	2.295	
<u>NOTOMASTIS HEMIPODUS</u>	5	0.689	6	1.967	
<u>ONUPHIS EREMITA OCULATA</u>	8	1.102	7	2.295	
<u>PARANATATES SPECIOSA</u>	0	0.0	1	0.328	
<u>PARACNIDES LYRA</u>	37	5.096	75	24.590	
<u>PARACNIDES FULGENS</u>	5	0.689	0	0.0	
<u>PARAFFICNCSPIC PINNATA</u>	2	0.275	1	0.328	
<u>PERHUS EHLERSI</u>	1	0.138	0	0.0	
<u>PHYLLOCIDCE ARENAE</u>	1	0.138	0	0.0	
<u>POLYNCIDAE UNIDENTIFIED SP.</u>	1	0.138	1	0.328	
<u>PRIONOSPID CRISTATA</u>	38	5.234	2	0.656	
<u>RULLIERINERIS MEXICANA</u>	23	3.168	4	1.311	
<u>SCOLOPCLOS RUBRA</u>	1	0.138	0	0.0	
<u>SPIO PETTIBONEAE</u>	3	0.413	1	0.328	
<u>THARYX ANNULOSUS</u>	1	0.138	0	0.0	
 <u>SIPUNCULIDA (PEANUT WORMS)</u>					
<u>GOLFINGIA TRICHOCEPHALA</u>	2	0.275	0	0.0	
 <u>ARTHROPODA (CRUSTACEANS)</u>					
<u>AMPHIPODA</u>					
<u>AMPELISCA VERRILLI</u>	3	0.413	1	0.328	
<u>ERICHTHONIUS SP.</u>	2	0.275	1	0.328	
<u>PARAFHOXUS SP.</u>	3	0.413	0	0.0	
<u>PSEUDOFPLATYISCHNOPOUS SP.</u>	22	3.030	26	8.525	
<u>SYNCHELIDIUM SP.</u>	10	1.377	2	0.656	
<u>ANCRURA</u>					
<u>ALBLNEA PARETII</u>	3	0.413	1	0.328	
<u>EUCERAMUS PRAEOLONGUS</u>	0	0.0	1	0.328	
<u>PAGURUS LONGICARPUS</u>	7	0.964	0	0.0	
<u>BRACHYURA</u>					
<u>OVALIPES OCCELLATUS</u>	1	0.138	1	0.328	
<u>PINNIXIA SAYANA</u>	0	0.0	1	0.328	
<u>CALLIANASSIDAE</u>					
<u>CALLIANASSA JAMAICENSIS</u>	0	0.0	1	0.328	
<u>CUMACEA</u>					
<u>CYCLOPSIS SP.</u>	10	1.377	1	0.328	
<u>CYCLOPSIS VARIANS</u>	3	0.413	2	0.656	
<u>OXYUROSTYLIS SMITHI</u>	8	1.102	1	0.328	
<u>LEPTOSTRACA</u>					
<u>NEBALIA SP.</u>	1	0.138	3	0.984	
<u>MYSIDACEA</u>					
<u>BOWMANIELLA SP.</u>	1	0.138	0	0.0	
<u>MYSIOPSIS BIGELOWI</u>	1	0.138	0	0.0	
<u>OSTRACODA</u>					
<u>UNIDENTIFIED SP.</u>	3	0.413	1	0.328	
<u>PENAIDEA</u>					
<u>TRACHYPENAEUS CONSTRICTUS</u>	1	0.138	0	0.0	
<u>TANAIDACEA</u>					
<u>UNIDENTIFIED SP.</u>	1	0.138	0	0.0	
 <u>ECHINODERMATA</u>					
<u>ECHINOICEA (SAND DOLLARS; URCHINS)</u>					
<u>MOIRA ATROPS</u>	2	0.275	0	0.0	
<u>MELLITA GUINQUIE SPERFICRATA</u>	55	7.576	0	0.0	
<u>OPHIURICIDEA (BRITTLE STARS)</u>					
<u>MICROPHOLIS GRACILLIMA</u>	3	0.413	2	0.984	
<u>OPHICPHRAGMUS WURDEMANI</u>	0	0.0	1	0.328	
 <u>CEPHALOCHORDATA (LANCELETS)</u>					

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL
11/1/77
(CONTINUED)

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
<u>ERANCHIOTOMA FLORIDAE</u>	9	1.240	2	0.656
TOTALS	726		305	
NO. SPECIES		72		54
NO. IND. PER M ²		2904		1220
S-W INDEX - H°(LN)		3.0299		2.8764
EVENNESS - J		0.7085		0.7211

TREASURE ISLAND MOTEL (STATION 1) - CONTROL & EXPERIMENTAL
 7/11/77

SPECIES	NO. OF TOTAL	IND. PERCENT	NO. OF INC. (E.)		PERCENT
			TOTAL	PERCENT	
CNIDARIA					
ACTINIARIA (SEA ANEMONES)					
UNIDENTIFIED SP.	1	0.048	5	0.330	
PLATYHELMINTHES					
TURBELLARIA (FLATWORMS)					
UNIDENTIFIED SP.	2	0.095	5	0.330	
NEMERTINEA (RIBBON WORMS)					
UNIDENTIFIED SP.	51	2.425	52	3.435	
NEMATODA (ROUNDWORMS)					
UNIDENTIFIED SP.	9	0.428	0	0.0	
BRACHIOPODA (LAMP SHELLS)					
<u>GLOTTIDIA PYRAMIDATA</u>	8	0.380	4	0.264	
MOLLUSCA (SHELLFISH)					
GASTROPODA (SNAILS)					
<u>ACTECCINA CANALICULATA</u>	1	0.048	0	0.0	
<u>ACTECCINA CANDEI</u>	39	1.854	1	0.066	
<u>BULLA STRIATA</u>	1	0.048	0	0.0	
<u>CAECUM IMBRICATUM</u>	2	0.095	0	0.0	
<u>SYLICHNELLA BIDENTATA</u>	2	0.095	6	0.396	
<u>DIASTOMA VARIUM</u>	18	0.856	1	0.066	
<u>NATICA PUSILLA</u>	6	0.285	0	0.0	
<u>OLIVA SAYANA</u>	1	0.048	0	0.0	
<u>POLINICES DUPLICATUS</u>	3	0.143	3	0.198	
<u>TERFERA DISLOCATA</u>	1	0.048	0	0.0	
PELECYPODA (CLAMS)					
<u>ERVILIA CONCENTRICA</u>	52	2.473	0	0.0	
<u>LEPTA SP.</u>	0	0.0	3	0.198	
<u>LUCINA MULTILINEATA</u>	167	7.941	45	2.972	
<u>TERIPLEMMA MARGARITACEUM</u>	8	0.380	1	0.066	
<u>PITAR SIMPSONI</u>	4	0.190	0	0.0	
<u>SOLEN VIRIDIS</u>	0	0.0	1	0.066	
<u>TELLINA AEQUISTRIGATA</u>	1	0.048	1	0.066	
<u>TELLINA TAMPAENSIS</u>	3	0.143	0	0.0	
<u>TELLINA TEXANA</u>	20	0.951	9	0.594	
<u>TELLINA VERSICOLOR</u>	182	8.654	68	4.491	
ANNELIDA (SEGMENTED WORMS)					
OLIGOCHAETA					
UNIDENTIFIED SP.	35	1.664	17	1.123	
POLYCHAETA					
<u>AGLAUCHAMUS VERRILLI</u>	1	0.048	0	0.0	
<u>APCPFRICNSPIG PYGMAEA</u>	7	0.333	12	0.793	
<u>ARICIDEA CERFUTI</u>	1	0.048	0	0.0	
<u>ARICIDEA FRAGILIS</u>	10	0.476	19	1.255	
<u>ARICIDEA PHILEINAE</u>	5	0.238	0	0.0	
<u>ARICIDEA SUECICA</u>	0	0.0	11	0.727	
<u>ARMANDIA AGILIS</u>	0	0.0	5	0.330	
<u>ARMANDIA MACULATA</u>	0	0.0	1	0.066	
<u>CARAZZIELLA SP.</u>	6	0.285	0	0.0	
<u>CAULLERIELLA SP.</u>	1	0.048	0	0.0	
<u>CHONE SP.</u>	53	2.520	15	0.991	
<u>CISTENIDES GOULDII</u>	0	0.0	1	0.066	
<u>DISPIG UNINCINATA</u>	0	0.0	5	0.330	
<u>ETECNE LACTEA</u>	10	0.476	0	0.0	
<u>GLYCERA AMERICANA</u>	104	4.945	102	6.737	

TREASURE ISLAND MOTEL (STATION 1) - CONTROL & EXPERIMENTAL
 7/11/77
 (CONTINUED)

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
<u>GLYCERA DIERANCHIATA</u>	0	0.0	2	0.132
<u>GENTIACA LITTICREA</u>	18	0.856	15	0.991
<u>GRUBEULEFIS MEXICANA</u>	2	0.095	0	0.0
<u>CRYPTIS VITTATA</u>	4	0.190	4	0.264
<u>HAPLISCCICLOPLCS FOLIOSUS</u>	1	0.048	4	0.264
<u>HAPLISCCICLOPLCS FRAGILIS</u>	3	0.143	3	0.198
<u>HAPLISCCICLOPLCS ROBUSTUS</u>	0	0.0	2	0.132
<u>HARMOTHICE LUNULATA</u>	1	0.048	0	0.0
<u>LUMBFINERIS CRUZENSIS</u>	391	18.592	249	16.446
<u>LUMBFINERIS TETRAURA</u>	22	1.046	6	0.396
<u>MAGELLINA LINGICOFNIS</u>	0	0.0	1	0.066
<u>MAGELLINA SP.</u>	3	0.143	2	0.132
<u>MEDICIMASTUS CALIFORNIENSIS</u>	5	0.238	1	0.066
<u>MESOCRAFTOPTERUS SAGITTARIUS</u>	0	0.0	1	0.066
<u>MICROPHTHALMUS SP.</u>	1	0.048	0	0.0
<u>NEANTIDES ACUMINATA</u>	3	0.143	2	0.132
<u>NEANTIDES SUCCINEA</u>	0	0.0	2	0.132
<u>NEPHTYS BUCERA</u>	4	0.190	4	0.264
<u>NEPHTYS PICTA</u>	280	13.314	391	26.826
<u>NEREIS LAMELLOSA</u>	0	0.0	2	0.132
<u>NOTOCMASTUS HEMIPODUS</u>	1	0.048	2	0.132
<u>ONUPHIS EREMITA OCULATA</u>	54	2.568	37	2.444
<u>ONUPHIS NEBULOSA</u>	5	0.238	0	0.0
<u>OWENIA FUSIFORMIS</u>	5	0.238	4	0.264
<u>PARANAITES SPECIOSA</u>	1	0.048	0	0.0
<u>PARACNIDES LYRA</u>	53	2.520	148	9.775
<u>PARACNIS FULGENS</u>	6	0.285	0	0.0
<u>PARAPRIONOSPIG PINNATA</u>	2	0.095	6	0.396
<u>PHYLLODOCE ARENAE</u>	3	0.143	2	0.132
<u>PODAKE OBSCURA</u>	1	0.048	0	0.0
<u>POECILIOPHAGUS JOHNSONI</u>	1	0.048	2	0.132
<u>PRIONOSPIC CRISTATA</u>	27	1.284	12	0.793
<u>PSEUDOEURYTHICE AMBIGUA</u>	1	0.048	0	0.0
<u>RULLIERINEREIS MEXICANA</u>	4	0.190	0	0.0
<u>SABELLA MICROPHTHALMA</u>	0	0.0	1	0.066
<u>SCOLELEPIS SCUAMATA</u>	4	0.190	0	0.0
<u>SCOLELEFIS TEXANA</u>	0	0.0	1	0.066
<u>SCOLEPLCS ARMIGER</u>	6	0.285	6	0.396
<u>SCOLEPLCS FUERA</u>	2	0.095	0	0.0
<u>SIGALION ARENICOLA</u>	2	0.095	0	0.0
<u>SIGAMERA BASSI</u>	2	0.095	0	0.0
<u>SPIO PETTIBONEAE</u>	0	0.0	1	0.066
<u>SPIOCHAETOPTERUS OCULATUS</u>	0	0.0	1	0.066
<u>SPIOPLANES BOMBYX</u>	18	0.856	27	1.783
 <u>SIPUNCULIDA (PEANUT WORMS)</u>				
<u>GOLFINGIA TRICHOCEPHALA</u>	1	0.048	0	0.0
 <u>ARTHROPODA (CRUSTACEANS)</u>				
<u>AMPHIPODA</u>				
<u>ACANTHOHAUSTORIUS SP.</u>	2	0.095	0	0.0
<u>AMPELISCA ABDITA</u>	11	0.523	2	0.132
<u>AMPELISCA VADOURM</u>	5	0.238	0	0.0
<u>AMPELISCA VERRILLI</u>	40	1.902	37	2.444
<u>ARGIESA SP.</u>	1	0.048	2	0.132
<u>CAPRELLIDAE UNIDENTIFIED SP.</u>	3	0.143	2	0.132
<u>ERICHTHONIUS SP.</u>	2	0.095	0	0.0
<u>GAMMAROPSIS SP.</u>	1	0.048	0	0.0
<u>LISTRIELLA SP.</u>	12	0.571	3	0.198
<u>LYSTIANCFSTIS SP.</u>	1	0.048	1	0.066
<u>MONCULCDES SP.</u>	2	0.095	1	0.066

TREASURE ISLAND MOTEL (STATION 1) - CONTROL & EXPERIMENTAL
7/11/77
(CONTINUED)

SPECIES	NO. OF TOTAL	IND. (C.) PERCENT	NO. OF IND. (E.)	
			TOTAL	PERCENT
<u>PHCTIS SP.</u>	6	0.285	0	0.0
<u>PROCTFAUSTORIUS SP.</u>	0	0.0	1	0.066
<u>PSEUDOPLATYISCHNOPUS SP.</u>	26	1.236	15	0.991
<u>SYNCFELIDIUM SP.</u>	68	3.233	40	2.642
ANOMURA				
<u>ALBUNEA FARETII</u>	0	0.0	1	0.066
BRACHYURA				
<u>PINNIXIA CYLINDRICA</u>	4	0.190	0	0.0
<u>PORTNLIS SP.</u>	0	0.0	12	0.793
<u>PORTNLIDAE UNIDENTIFIED SP.</u>	6	0.285	0	0.0
CARICEA				
<u>OGYRIDES ALPHAEROSTRIS</u>	0	0.0	6	0.396
<u>OGYRIDES LIMICLA</u>	0	0.0	2	0.132
<u>PERCLIMENES LONGICAUDATUS</u>	0	0.0	1	0.066
<u>PRCESSA HEMPHILLI</u>	5	0.238	3	0.198
CUMACEA				
<u>CYCLAPSIS SP.</u>	19	0.903	4	0.264
<u>CYCLAPSIS VARIANS</u>	82	3.899	22	1.453
<u>DYXYLOSTYLIS SMITHI</u>	24	1.141	5	0.330
LEPTESTRACA				
<u>NEBALIA SP.</u>	1	0.048	1	0.066
MYIDACEA				
UNIDENTIFIED SP.	1	0.048	1	0.066
OSTRACCCA				
UNIDENTIFIED SP.	1	0.048	0	0.0
PENAIDEA				
<u>TRACHYPENAEUS CONSTRICTUS</u>	0	0.0	2	0.132
STOMATOPODA				
<u>ACANTHOSQUILLA BIMINENSIS</u>	1	0.048	0	0.0
ECHINODERMA				
HOLOTHUROIDEA (SEA CUCUMBERS)				
<u>LEPICSYNAFTA SP.</u>	3	0.143	11	0.727
OPHIURICIDEA (BRITTLE STARS)				
<u>OPHICPHRAGMUS NURDEMANI</u>	1	0.048	0	0.0
UNIDENTIFIED SP.	6	0.285	3	0.198
HEMICORDATA				
ENTEROPNEUSTA (ACORN WORMS)				
UNIDENTIFIED SP.	1	0.048	0	0.0
CEPHALOCHORDATA (LANCELETS)				
<u>BRANCHIOSTOMA FLORIDAE</u>	14	0.666	2	0.132
VERTEBRATA				
PISCES (FISHES)				
<u>HEMIPIFICNCTUS NOVACULA</u>	2	0.095	0	0.0
TOTALS	2103		1514	
NO. SPECIES		99		81
NO. IND. PER M2		3365		2422
S-W INDEX - H'(LN)		3.2301		2.8904
EVENNESS - J		0.7029		0.6577

SUN & SWIM MOTEL (STATION 2) - CONTROL & EXPERIMENTAL
7/15/77

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
CNIDARIA				
ACTINIARIA (SEA ANEMONES)				
UNIDENTIFIED SP.	1	0.043	0	0.0
PLATYHELMINTHES				
TURBELLARIA (FLATWORMS)				
UNIDENTIFIED SP.	12	0.512	16	0.663
NEMERTINEA (RIBBON WORMS)				
UNIDENTIFIED SP.	57	2.432	45	1.864
NEMATODA (ROUNDWORMS)				
UNIDENTIFIED SP.	16	0.683	10	0.414
BRACHIOPODA (LAMP SHELLS)				
<u>GLOTTICIA PYRAMIDATA</u>	10	0.427	10	0.414
MOLLUSCA (SHELLFISH)				
GASTROPODA (SNAILS)				
<u>ACTECCINA CANALICULATA</u>	0	0.0	1	0.041
<u>ACTECCINA CANDEI</u>	19	0.811	32	1.326
<u>ANACHIS FLORICANA</u>	0	0.0	1	0.041
<u>BULLA STRIATA</u>	1	0.043	4	0.166
<u>CYLICINELLA BIDENTATA</u>	4	0.171	4	0.166
<u>CIASTOMA VARIUM</u>	21	0.896	16	0.663
<u>NATICA PUSILLA</u>	10	0.427	21	0.870
<u>OLIVELLA BULLULA</u>	1	0.043	1	0.041
<u>OLIVELLA MINUTA</u>	0	0.0	3	0.124
<u>OLIVELLA MUTICA</u>	3	0.128	0	0.0
<u>POLINICES DUPLICATUS</u>	1	0.043	2	0.083
<u>TEREERA DISLOCATA</u>	2	0.085	0	0.0
<u>TURBONILLA ELEGANTULA</u>	1	0.043	1	0.041
PELECYPODA (CLAMS)				
<u>ANATINA ANATINA</u>	3	0.128	2	0.083
<u>ERVILIA CONCENTRICA</u>	41	1.749	44	1.823
<u>LAEVICARDIUM LAEVIGATUM</u>	5	0.213	16	0.663
<u>LEPTIN. SP.</u>	2	0.085	0	0.0
<u>LUCINA MULTILINEATA</u>	191	8.148	19	0.787
<u>MACROCALLISTA NIMBOSA</u>	0	0.0	1	0.041
<u>MUSCULUS LATERALIS</u>	1	0.043	0	0.0
<u>PERIPLOMA MARGARITACEUM</u>	5	0.213	18	0.746
<u>PITAR SIMPSONI</u>	0	0.0	1	0.041
<u>TELLINA AEQUISIRIATA</u>	6	0.256	4	0.166
<u>TELLINA TEXANA</u>	19	0.811	9	0.373
<u>TELLINA VERSICOLOR</u>	262	11.177	196	6.119
<u>TRACHYCARDIUM MURICATUM</u>	3	0.128	9	0.373
<u>VARICORBULA OPERCULATA</u>	5	0.213	0	0.0
<u>VENERICAE UNIDENTIFIED SP.</u>	53	2.261	45	1.864
ANNELIDA (SEGMENTED WORMS)				
OLIGOCHAETA				
UNIDENTIFIED SP.	46	1.962	55	2.278
POLYCHAETA				
<u>APOPRIONOSPI PYGMAEA</u>	2	0.085	6	0.249
<u>ARICIDEA FRAGILIS</u>	9	0.384	2	0.083
<u>ARICIDEA PHILBINAE</u>	7	0.299	0	0.0
<u>ARICIDEA SUECICA</u>	0	0.0	1	0.041
<u>ARICIDEA SP.</u>	0	0.0	2	0.083
<u>ARMANDIA AGILIS</u>	10	0.427	13	0.539
<u>ARMANDIA MACULATA</u>	13	0.555	21	0.870

SUN & SWIM MOTEL (STATION 2) - CONTROL & EXPERIMENTAL

7/15/77

(CONTINUED)

SPECIES	NO. OF TOTAL	IND. (C.) PERCENT	NO. OF TOTAL		IND. (E.) PERCENT
			CF	IND. (E.)	
<u>BRANIA WELLFLEETENSIS</u>	1	0.043	0	0.0	
<u>CAPITELLA CAPITATA</u>	0	0.0	3	0.124	
<u>CERATINEREIS IRRITABILIS</u>	0	0.0	1	0.041	
<u>CHCNE SP.</u>	28	1.195	30	1.243	
<u>CIRRIFHRUS LYRIFORMIS</u>	9	0.384	15	0.621	
<u>CISTERIDES GULDII</u>	2	0.085	1	0.041	
<u>DISPIC UNCINATA</u>	0	0.0	2	0.083	
<u>ETECNE LACTEA</u>	10	0.427	6	0.249	
<u>EULALIA SANGUINEA</u>	1	0.043	0	0.0	
<u>GLYCERA AMERICANA</u>	87	3.712	92	3.811	
<u>GONIACA LITTOREA</u>	18	0.768	13	0.539	
<u>GRUBEULEPIS MEXICANA</u>	3	0.128	1	0.041	
<u>GYPTIS VITTATA</u>	7	0.299	3	0.124	
<u>HAPLCSCICLCPLOS FOLIOSUS</u>	2	0.085	2	0.083	
<u>HAPLCSCOLOPLOS FRAGILIS</u>	1	0.043	2	0.083	
<u>HARMCITHOE LUNULATA</u>	1	0.043	0	0.0	
<u>LUMBRINERIS CRUZENSIS</u>	397	16.937	437	18.103	
<u>LUMBRINERIS TETRAURA</u>	16	0.683	13	0.539	
<u>MAGELLINA SP.</u>	2	0.085	5	0.207	
<u>MEDICNASTUS CALIFORNIENSIS</u>	0	0.0	1	0.041	
<u>MICRCFTHALMUS SCZELKOWII</u>	1	0.043	0	0.0	
<u>MICRCFTHALMUS SP.</u>	3	0.128	0	0.0	
<u>NEANTHES ACUMINATA</u>	1	0.043	1	0.041	
<u>NEPHYTIS BUCERA</u>	5	0.213	3	0.124	
<u>NEPHYTIS PICTA</u>	206	8.788	122	5.054	
<u>NEREIS LAMELLCSA</u>	2	0.085	0	0.0	
<u>NOTCNASTUS HEMIPODUS</u>	0	0.0	1	0.041	
<u>NOTCNASTUS LATERRICEUS</u>	1	0.043	0	0.0	
<u>CNUPHIS EREMITA OCULATA</u>	34	1.451	51	2.113	
<u>OPHELIA SP.</u>	1	0.043	0	0.0	
<u>CWENIA FUSIFORMIS</u>	21	0.896	9	0.373	
<u>PARACNICES LYRA</u>	83	3.541	42	1.740	
<u>PARACNIS FULGENS</u>	6	0.256	3	0.124	
<u>PARAPRIONOSPIRO PINNATA</u>	0	0.0	1	0.041	
<u>PHYLLODCE ARENAE</u>	1	0.043	11	0.456	
<u>PRIONOSPIRO CRISTATA</u>	44	1.877	46	1.906	
<u>RULLIERINEREIS MEXICANA</u>	5	0.213	7	0.290	
<u>SABELLA MICROPHTHALMA</u>	5	0.213	0	0.0	
<u>SCOLELEPIS TEXANA</u>	0	0.0	2	0.083	
<u>SCOLCPLOS ARMIGER</u>	10	0.427	14	0.580	
<u>SCOLCPLOS RUDRA</u>	1	0.043	1	0.041	
<u>SIGAMERA BASSI</u>	0	0.0	1	0.041	
<u>SPHAEROSYLLIS SP.</u>	0	0.0	1	0.041	
<u>SPIO PETTIBONEAE</u>	1	0.043	1	0.041	
<u>SPIOPHANES BOMBYX</u>	9	0.384	6	0.249	
<u>STREPTOSYLLIS ARENAE</u>	0	0.0	1	0.041	
<u>WEBSTERINEREIS TRIDENTATA</u>	0	0.0	1	0.041	
 <u>SIPUNCULICA (PEANUT WORMS)</u>					
<u>GOLFINGIA TRICHOCEPHALA</u>	1	0.043	0	0.0	
 <u>ARTHROPODA (CRUSTACEANS)</u>					
<u>AMPHIFCCA</u>					
<u>ACANTHOHAUSTORIUS SP.</u>	7	0.299	12	0.497	
<u>AMPELISCA ABDITA</u>	2	0.085	4	0.166	
<u>AMPELISCA VACCUM</u>	4	0.171	4	0.166	
<u>AMPELISCA VERRILLI</u>	32	1.365	56	2.320	
<u>ARGISSA SP.</u>	4	0.171	6	0.249	
<u>CAPRELLIDAE UNIDENTIFIED SP.</u>	4	0.171	2	0.083	
<u>CARINOBATEA SP.</u>	1	0.043	0	0.0	
<u>ERICHTHONIUS SP.</u>	2	0.085	1	0.041	

SUN & SWIM MOTEL (STATION 2) - CONTROL & EXPERIMENTAL

7/15/77
(CONTINUED)

SPECIES	NO. OF IND. (%)		NO. OF IND. (%)	
	TOTAL	PERCENT	TOTAL	PERCENT
HIPPCMEDON SP.	1	0.043	1	0.041
LISTRIELLA SP.	9	0.384	11	0.456
LYSIANOPSIS SP.	1	0.043	6	0.249
MELITA APPENDICULATA	4	0.171	1	0.041
MICRODEUTOPUS SP.	1	0.043	2	0.083
MONOCULODES SP.	3	0.128	7	0.290
PHOTIS SP.	1	0.043	1	0.041
PRCTCHAUSTORIUS SP.	3	0.128	9	0.373
PSEUDCHAUSTORIUS SP.	38	1.621	36	1.491
PSEUDOFELATYISCHNCIPUS SP.	57	2.432	72	2.983
SYNCFELIDIUM SP.	69	2.944	81	3.355
UNIDENTIFIED SP.	4	0.171	1	0.041
ANOMURA				
ALBUREA FARETII	3	0.128	2	0.083
PAGUFUS LONGICARPUS	1	0.043	1	0.041
BRACHYUFA				
PINNIXIA SAYANA	1	0.043	6	0.249
FINNCTHERES OSTREUM	6	0.256	0	0.0
PORTUNUS SP.	16	0.683	17	0.704
CARIDEA				
LATREUTES PARVULLS	0	0.0	1	0.041
DYGRIDES LIMICOLA	3	0.128	7	0.290
PROCESSA HEMPHILLI	10	0.427	20	0.829
CUMACEA				
CYCLAPSIS SP.	45	1.920	83	3.438
CYCLAPSIS VARIANS	59	2.517	229	9.486
CXYUFOSTYLIS SMITHI	39	1.664	59	2.444
UNIDENTIFIED SP.	1	0.043	1	0.041
LEPTOSTRACA				
NEBALIA SP.	10	0.427	50	2.071
mysidacea				
MYSIDOPSIS BIGELOWI	1	0.043	0	0.0
UNIDENTIFIED SP.	5	0.213	8	0.331
OSTRACCA				
UNIDENTIFIED SP.	1	0.043	6	0.249
PEMIDEA				
SICYCNIA BREVIROSTRIS	0	0.0	2	0.083
TRACHYPENAEUS CONSTRICTUS	2	0.085	1	0.041
STOMATOPODA				
ACANTHOSQUILLA BIMINIENSIS	2	0.085	0	0.0
CORONIS EXCAVATRIX	0	0.0	1	0.041
ECHINODERDATA				
ASTEROIDEA (STARFISHES)				
LUDIA ALTERNATA	1	0.043	0	0.0
HOLOTUROIDEA (SEA CUCUMBERS)				
LEPTISYNAPTA SP.	1	0.043	2	0.083
OPHIURICIDEA (BRITTLE STARS)				
UNIDENTIFIED SP.	10	0.427	4	0.166
HEMICHORDATA				
ENTEROPNEUSTA (ACORN WORMS)				
UNIDENTIFIED SP.	0	0.0	1	0.041
CEPHALOCHORDATA (LANCELETS)				
BRANCHISTOMA FLORICAE	12	0.512	15	0.621
VERTEBRATA				
PISCES (FISHES)				
HEMIPIERONOTUS NOVACULA	0	0.0	1	0.041
LEPOPHIDIUM GRAELLSI	0	0.0	1	0.041

SLN & SWIM MOTEL (STATION 2) - CONTROL & EXPERIMENTAL

7/15/77

(CONTINUED)

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
TOTALS	2344		2414	
NO. SPECIES		112		114
NO. IND. PER M2		3750		3862
S-W INDEX - H' (LN)		3.4273		3.5029
EVENNESS - J		0.7264		0.7396

HILTON HOLIDAY INN (STATION 3) - CONTROL & EXPERIMENTAL
7/25/77

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
CNIDARIA				
ACTINIARIA (SEA ANEMONES)				
UNIDENTIFIED SP.	0	0.0	5	0.198
PLATYHELMINTHES				
TURBELLARIA (FLATWORMS)				
UNIDENTIFIED SP.	5	0.333	37	1.467
NEMERTINEA (RIBBON WORMS)				
UNIDENTIFIED SP.	49	1.812	57	2.259
NEMATODA (ROUNDWORMS)				
UNIDENTIFIED SP.	18	0.666	28	1.110
PHORONIDA (PHORONIDS)				
<u>PHRCRINIS ARCHITECTA</u>	1	0.037	3	0.119
BRACHIOPODA (LAMP SHELLS)				
<u>GLOTTIDIUM PYRAMIDATA</u>	0	0.0	4	0.159
MOLLUSCA (SHELLFISH)				
GASTROPODA (SNAILS)				
<u>ACTECCINA CANALICULATA</u>	0	0.0	1	0.040
<u>ACTECCINA CANDEI</u>	27	0.999	10	0.396
<u>ANACHIS FLORICANA</u>	1	0.037	1	0.040
<u>BULLA STRIATA</u>	2	0.074	0	0.0
<u>CAECUM IMBRICATUM</u>	1	0.037	0	0.0
<u>CAECUM PULCHELLUM</u>	3	0.111	0	0.0
<u>CYLICINELLA BIDENTATA</u>	11	0.407	0	0.0
<u>CIASTICMA VARIUM</u>	83	3.070	21	0.912
<u>MELANELLA JAMAICENSIS</u>	0	0.0	1	0.040
<u>NATICA PUSILLA</u>	46	1.701	30	1.189
<u>CLIVA SAYANA</u>	1	0.037	0	0.0
<u>OLIVELLA MINUTA</u>	5	0.185	4	0.159
<u>OLIVELLA MUTICA</u>	7	0.259	7	0.277
<u>PHILINE SAGRA</u>	0	0.0	4	0.159
<u>POEINICES DUPLICATUS</u>	1	0.037	1	0.040
<u>TURBCNILLA CONRADII</u>	6	0.222	11	0.436
PELICYPODA (CLAMS)				
<u>ANATINA ANATINA</u>	4	0.148	4	0.159
<u>ERVILIA CONCENTRICA</u>	27	0.999	18	0.713
<u>LAEVICARDIUM LAEVIGATUM</u>	1	0.037	0	0.0
<u>LEPTEN SP.</u>	10	0.370	4	0.159
<u>LUCINA MULTILINEATA</u>	53	1.960	69	2.735
<u>LYCONIA H. FLORICANA</u>	0	0.0	1	0.040
<u>MACOMA CONSTRICTA</u>	2	0.074	0	0.0
<u>PANCCRA TRILINEATA</u>	0	0.0	1	0.040
<u>PERIPLOMA MARGARITACEUM</u>	2	0.074	2	0.079
<u>PITAR SIMPSONI</u>	47	1.738	29	1.149
<u>STRIGILLA MIRABILIS</u>	4	0.148	8	0.317
<u>TELLINA AEQUISTRIGATA</u>	2	0.074	18	0.713
<u>TELLINA TEXANA</u>	363	13.425	349	13.833
<u>TELLINA VERSICOLOR</u>	203	7.507	166	6.579
<u>TRACHYCARDIUM MURICATUM</u>	3	0.111	2	0.079
<u>VENERICAE UNIDENTIFIED SP.</u>	12	0.444	37	1.467
ANNELIDA (SEGMENTED WORMS)				
OLIGOCHAETA				
UNIDENTIFIED SP.	39	1.442	8	0.317
POLYCHAETA				

HILTON HOLIDAY INN (STATION 3) - CONTROL & EXPERIMENTAL

7/25/77

(CONTINUED)

SPECIES	NO. OF TOTAL	IND. (C.) PERCENT	NO. OF TOTAL	IND. (E.) PERCENT
AMERICORNUPHIS MAGNA	2	0.074	0	0.0
APCPRICNSPIG PYGMAEA	1	0.037	2	0.079
ARICIDEA FRAGILIS	9	0.333	37	1.467
ARICIDEA PHILBINAE	0	0.0	1	0.040
ARICIDEA SUECICA	2	0.074	2	0.079
ARMANDIA AGILIS	6	0.222	3	0.119
ARMANDIA MACULATA	35	1.294	23	0.912
BRANIA CLAVATA	1	0.037	1	0.040
BRANIA WELLFLEETENSIS	6	0.222	6	0.238
CHONE SP.	33	1.220	19	0.753
CIRRCOPHORUS LYRIFORMIS	0	0.0	15	0.595
CISTENIDES GOULDII	1	0.037	1	0.040
DIOPATRA CUPREA	0	0.0	4	0.159
DISPICUNCINATA	0	0.0	5	0.198
ETECNE LACTEA	6	0.222	12	0.476
GLYCERA AMERICANA	20	0.740	19	0.753
GOANIADA LITOREA	6	0.222	0	0.0
GRUBEWLEPIS MEXICANA	2	0.074	11	0.436
GYPTIS VITTATA	1	0.037	0	0.0
LAEONEREIS CULVERI	0	0.0	5	0.198
LOIMIA MEDUSA	3	0.111	0	0.0
LUMBFINERIS CRUZENSIS	653	24.149	500	19.818
LUMBFINERIS TETRAURA	2	0.074	0	0.0
LYSICICE NINETIA	1	0.037	0	0.0
MAGELCNA SP.	17	0.629	20	0.793
MEDICMASTUS CALIFORNIENSIS	1	0.037	0	0.0
MESOCIAEOPTERUS SAGITTARIUS	10	0.370	13	0.515
NEANTHES ACUMINATA	1	0.037	2	0.079
NEPHIYS BUCERA	9	0.333	12	0.476
NEPHIYS PICTA	81	2.996	71	2.814
NEREIS LAMELLCSA	1	0.037	0	0.0
NOTOMASTUS HEMIPODUS	2	0.074	3	0.119
NOTOMASTUS LATERICEUS	1	0.037	0	0.0
ONUPHIS EREMITA OCULATA	8	0.296	21	0.832
PARACNIDES LYRA	46	1.701	6	0.238
PARACNIDES FULGENS	10	0.370	3	0.119
PARAFRICNSPIG PINNATA	1	0.037	0	0.0
PARAFRICNSSYLLIS LCNIGICIRRATA	0	0.0	4	0.159
PHYLLOCCE ARENAE	1	0.037	6	0.238
PCECILCHAETUS JOHNSONI	0	0.0	1	0.040
PRICNSPIG CRISTATA	56	2.071	55	2.180
RULLIERINEFEIS MEXICANA	4	0.148	1	0.040
SABELLA MICROPHTHALMA	1	0.037	0	0.0
SCCLELEFIS TEXANA	3	0.111	3	0.119
SCCLCFLCS ARMIGER	2	0.074	1	0.040
SCCLCFLCS RUERA	1	0.037	1	0.040
SIGAMERA BASSI	11	0.407	13	0.515
SPIO PETTIRONAE	2	0.074	2	0.079
SPICCFAEOPTERUS OCULATUS	1	0.037	1	0.040
SPICOPFANES BOMBYX	1	0.037	2	0.079
STREPTOSYLLIS ARENAE	0	0.0	1	0.040
ARTHROPODA (CRUSTACEANS)				
AMPHIPODA				
ACANTHOHAUSTORIUS SP.	1	0.037	0	0.0
AMPELISCA AEDITA	4	0.148	3	0.119
AMPELISCA VERRILLI	16	0.592	13	0.515
ARGISSA SP.	3	0.111	7	0.277
ELASMCUPUS SP.	1	0.037	0	0.0
LISTRIELLA SP.	9	0.333	7	0.277
MELITA APPENDICULATA	3	0.111	0	0.0

HILTON HOLIDAY INN (STATION 3) - CONTROL & EXPERIMENTAL
 7/25/77
 (CONTINUED)

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
<u>MICRDEUTOPUS SP.</u>	10	0.370	4	0.159
<u>MONOCULODES SP.</u>	22	0.814	30	1.189
<u>PROTOAUSTORIUS SP.</u>	146	5.399	242	9.592
<u>PSEUDOFALSTORIUS SP.</u>	9	0.333	4	0.159
<u>PSEUDOPLATYISCHNOPLUS SP.</u>	118	4.364	115	4.558
<u>SYNCHELIDIUM SP.</u>	26	0.962	41	1.625
ANOMURA				
<u>ALBUNEA PARETII</u>	3	0.111	5	0.198
<u>PAGURUS LONGICARPUS</u>	3	0.111	1	0.040
BRACHYURA				
<u>HEPATUS EPHELITICUS</u>	0	0.0	1	0.040
<u>ovalipes ocellatus</u>		0.0	1	0.040
<u>PINNIXIA SAYANA</u>	12	0.444	0	0.0
<u>FINNITHERES OSTREUM</u>	1	0.037	0	0.0
<u>PORTUNUS SP.</u>	9	0.333	2	0.079
CARIDEA				
<u>LATRETTES PARVULUS</u>	1	0.037	0	0.0
<u>PROCESSA HEMPHILLI</u>	7	0.259	2	0.079
CLIMACEA				
<u>CYCLOPSIS SP.</u>	22	0.814	59	2.338
<u>CYCLOPSIS VARIANS</u>	55	2.034	61	2.418
<u>OXYLEOSTYLIS SMITHI</u>	6	0.222	13	0.515
ISOPODA				
<u>EDOTEA MONTOSA</u>	1	0.037	0	0.0
LEPTOSTRACA				
<u>NEBALIA SP.</u>	13	0.481	11	0.436
MYSIDACEA				
<u>UNIDENTIFIED SP.</u>	10	0.370	4	0.159
OSTRACODA				
<u>UNIDENTIFIED SP.</u>	14	0.518	17	0.674
PEMIDEA				
<u>TRACHYPENAEUS CONSTRICTUS</u>	0	0.0	1	0.040
ECHINODERMATA				
OPHIURICIDEA (BRITTLE STARS)				
<u>UNIDENTIFIED SP.</u>	5	0.185	8	0.317
CEPHALOCHORDATA (LANCETELS)				
<u>BRANCHISTOMA FLORIDAE</u>	69	2.552	19	0.753
VERTEBRATA				
PISCES (FISHES)				
<u>HEMIPTERONOTUS NOVACULA</u>	1	0.037	1	0.040
TOTALS	2704		2523	
NO. SPECIES	105		98	
NO. IND. PER M2	4326		4037	
S-W INDEX - H' (LN)	3.1958		3.2651	
EVENNESS - J	0.6867		0.7121	

SANDPIPER MOTEL (STATION 4) - CONTROL & EXPERIMENTAL
7/26/77

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
CNICARIA				
ACTINIANARIA (SEA ANEMONES)				
UNIDENTIFIED SP.	2	0.079	1	0.062
PLATYHELMINTHES				
TURBELLARIA (FLATWORMS)				
UNIDENTIFIED SP.	11	0.435	1	0.062
NEMERTINEA (RIBBON WORMS)				
UNIDENTIFIED SP.	36	1.422	34	2.103
NEMATODA (ROUNDWORMS)				
UNIDENTIFIED SP.	0	0.0	1	0.062
PHORONIDA (PHORONIDS)				
PHORONIS ARCHITECTA	0	0.0	1	0.062
BRACHIOPODA (LAMP SHELLS)				
GLCTTIDIA PYRAMICATA	1	0.040	8	0.495
MOLLUSCA (SHELLFISH)				
GASTROPODA (SNAILS)				
ACTEODINA CANDEI	0	0.0	1	0.062
CYLICHNELLA BIDENTATA	51	2.015	23	1.422
NATICA PUSILLA	36	1.422	10	0.618
OLIVELLA MINUTA	7	0.277	2	0.124
OLIVELLA MUTICA	7	0.277	3	0.186
PHILINE SAGRA	1	0.040	1	0.062
TURBCNILLA CONRADII	5	0.198	1	0.062
TURBCNILLA SP.	3	0.119	1	0.062
PELECYPODA (CLAMS)				
ERVILIA CONCENTRICA	15	0.593	1	0.062
LEPTIN SP.	29	1.146	1	0.062
LUCINA MULTILINEATA	13	0.514	157	9.709
PERIPLOMA MARGARITACEUM	0	0.0	1	0.062
PITAR SIMPSONI	114	4.504	18	1.113
STRIGILLA MIRABILIS	14	0.553	5	0.309
TELLINA AEQUISTRATA	0	0.0	4	0.247
TELLINA IRIS	0	0.0	11	0.680
TELLINA TEXANA	443	17.503	89	5.504
TELLINA VERSICOLOR	102	4.030	120	7.421
TRACHYCARDIUM MURICATUM	4	0.158	4	0.247
ANNELIDA (SEGMENTED WORMS)				
OLIGOCHAETA				
UNIDENTIFIED SP.	5	0.198	1	0.062
POLYCHAETA				
AONIDES MAYAQUEZENSIS	0	0.0	16	0.989
APOPRIONOSPIS PYGMAEA	0	0.0	2	0.124
ARICIDEA FRAGILIS	0	0.0	1	0.062
ARMANCIA AGILIS	28	1.106	57	3.525
ARMANDIA MACULATA	19	0.751	17	1.051
ERANIA WELLFLEETENSIS	13	0.514	13	0.804
CAPITELLA CAPITATA	2	0.079	33	2.041
CERATNEREIS IRRITABILIS	0	0.0	1	0.062
CHONE SP.	3	0.119	2	0.124
DISPICUNCINATA	0	0.0	1	0.062
ETEONE ALBA	1	0.040	0	0.0
ETEONE LACTEA	9	0.356	1	0.062
GLYCERA AMERICANA	28	1.106	65	4.020

SANDPIPER MOTEL (STATION 4) - CONTROL & EXPERIMENTAL
 7/26/77
 (CONTINUED)

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
<u>GONIACA LITTOREA</u>	0	0.0	2	0.124
<u>GRUERULEPIS MEXICANA</u>	0	0.0	4	0.247
<u>GYPTIS VITTATA</u>	0	0.0	10	0.618
<u>HAPLOSCOLOPLOS FOLIOSUS</u>	0	0.0	7	0.433
<u>HAPLOSCOLOPLOS FRAGILIS</u>	2	0.079	2	0.124
<u>HAPLOSCOLOPLOS ROBUSTUS</u>	0	0.0	4	0.247
<u>HEMIPODUS ROSEUS</u>	1	0.040	0	0.0
<u>LOIMIA MECUSA</u>	0	0.0	4	0.247
<u>LUMBFNERIS CRUZENSIS</u>	521	20.585	129	7.978
<u>MAGELCNA SP.</u>	10	0.395	4	0.247
<u>MESOCHAETOPTERUS SAGITTARIUS</u>	13	0.514	30	1.855
<u>NEANTHES ACUMINATA</u>	0	0.0	3	0.186
<u>NEPHTYS BUCERA</u>	26	1.027	12	0.742
<u>NEPHTYS PICTA</u>	2	0.079	143	8.844
<u>NOTOMASTUS HEMIPODUS</u>	0	0.0	1	0.062
<u>ONUPFIS EREMITA OCULATA</u>	22	0.869	10	0.618
<u>OPHELIA SP.</u>	0	0.0	2	0.124
<u>ORDINIA RISERI</u>	2	0.079	1	0.186
<u>PARANAITES SPECIOSA</u>	1	0.040	21	1.299
<u>PARACNIS FULGENS</u>	61	2.410	4	0.247
<u>PARAPRIONOSPIG PINNATA</u>	0	0.0	1	0.062
<u>PHYLLODOCE ARENAE</u>	4	0.158	5	0.309
<u>PHYLLOORNATUS</u>	1	0.040	0	0.0
<u>POLYDORA SOCIALIS</u>	1	0.040	0	0.0
<u>POLYDORA TETRABRANCHIA</u>	2	0.079	0	0.0
<u>PRIONOSPIG CRISTATA</u>	18	0.711	7	0.433
<u>RULLIERINEREIS MEXICANA</u>	0	0.0	8	0.495
<u>SCOLOPLES ARMIGER</u>	8	0.316	10	0.618
<u>SIGALION ARENICOLA</u>	0	0.0	3	0.186
<u>SIGAMBRA BASSI</u>	0	0.0	33	2.041
<u>SPIDIO PETTIBONEAE</u>	6	0.237	21	1.299
<u>SPIDOPHANES BOMBYX</u>	6	0.237	9	0.557
<u>STREPTOSYLLIS ARENAE</u>	1	0.040	0	0.0
 <u>SIPUNCULIDA (PEANUT WORMS)</u>				
<u>UNIDENTIFIED SP.</u>	5	0.198	3	0.186
 <u>ARTHROPODA (CRUSTACEANS)</u>				
<u>AMPHIPODA</u>				
<u>AMPELISCA ABDITA</u>	2	0.079	6	0.371
<u>AMPELISCA VERRILLI</u>	8	0.316	1	0.062
<u>ARGISSE SP.</u>	2	0.079	0	0.0
<u>LISTRIELLA SP.</u>	2	0.079	1	0.062
<u>MONOCERCUS SP.</u>	10	0.395	1	0.062
<u>PROTOHAUSTORIUS SP.</u>	385	15.211	38	2.350
<u>PSEUDOHAUSTORIUS SP.</u>	15	0.593	25	1.546
<u>PSEUDOCPLATYI SCHNOPIUS SP.</u>	141	5.571	38	2.350
<u>SYNCFELIDIUM SP.</u>	52	2.055	5	0.309
<u>ANOMURA</u>				
<u>ALBUNEA PARETII</u>	1	0.040	5	0.309
<u>PAGURUS LONGICARPUS</u>	3	0.119	5	0.309
<u>BRACHYURA</u>				
<u>PINNIXIA CRISTATA</u>	1	0.040	0	0.0
<u>PINNIXIA LEPTOSYNAPIAE</u>	0	0.0	3	0.186
<u>PINNIXIA PEARSEI</u>	0	0.0	1	0.062
<u>PINCHTERES OSTREUM</u>	0	0.0	3	0.186
<u>PORTUNUS SP.</u>	4	0.158	1	0.062
<u>CALLIATAKASSIDAE</u>				
<u>CALLIANASSA JAMAICENSIS</u>	0	0.0	1	0.062
<u>CARIDEA</u>				
<u>HIPPOCLYTE PLEURACANTHA</u>	1	0.040	0	0.0

SANDPIPER MOTEL (STATION 4) - CONTROL & EXPERIMENTAL
 7/26/77
 (CONTINUED)

SPECIES	NO. OF IND. TOTAL	IND. (C.) PERCENT	NO. OF IND. TOTAL	IND. (E.) PERCENT
<u>OGYRIDES LIMICOLA</u>	1	0.040	0	0.0
<u>PROCESSA HEMPHILLI</u>	8	0.316	4	0.247
<u>CUMACEA</u>				
<u>CYCLAPSIDA SP.</u>	14	0.553	4	0.247
<u>CYCLAPSIDA VARIAENS</u>	101	3.991	17	1.051
<u>OXYUROSTYLIS SMITHI</u>	4	0.158	2	0.124
<u>LEPTOSTRACA</u>				
<u>NEBALIA SP.</u>	5	0.198	9	0.557
<u>OSTRACODA</u>				
<u>UNIDENTIFIED SP.</u>	28	1.106	7	0.433
<u>PENAEIDEA</u>				
<u>PENAEUS DUORARUM</u>	1	0.040	0	0.0
<u>SICMATOPODA</u>				
<u>ACANTHOSQUILLA BIMINIENSIS</u>	0	0.0	1	0.062
<u>ECHINODERMATA</u>				
<u>ASTEROIDEA (STARFISHES)</u>				
<u>LUDIA ALTERNATA</u>	0	0.0	1	0.062
<u>ECHINOIDEA (SAND DOLLARS; URCHINS)</u>				
<u>NELLIA QUINQUESPERFORATA</u>	6	0.237	3	0.186
<u>OPHIUROIDEA (BRITTLE STARS)</u>				
<u>UNIDENTIFIED SP.</u>	5	0.198	39	2.412
<u>HEMICHORICATA</u>				
<u>ENTEROPNEUSTA (ACORN WORMS)</u>				
<u>UNIDENTIFIED SP.</u>	0	0.0	1	0.062
<u>CEPHALOCHORDATA (LANCELETS)</u>				
<u>BRANCHICISTICMA FLORICAE</u>	16	0.632	191	11.812
TOTALS	2531		1617	
NO. SPECIES		74		54
NO. IND. PER M ²		4050		2587
S-W INDEX - H'(LN)		2.8718		3.4385
EVENNESS - J		0.6672		0.7568

PEPPERTREE CONDOMINIUM (STATION 5) - CONTROL & EXPERIMENTAL
7/27/77

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
CNICARIA ACTINIARIA (SEA ANEMONES) UNIDENTIFIED SP.	3	0.341	0	0.0
PLATYHELMINTHES TURBELLARIA (FLATWORMS) UNIDENTIFIED SP.	0	0.0	3	0.180
NEVERTINEA (RIBBON WORMS) UNIDENTIFIED SP.	29	3.295	45	2.703
PHORONIDA (PHORONIDS) PHORONIS ARCHITECTA	0	0.0	1	0.060
ERACHIOPCEA (LAMP SHELLS) GLOTTIDIA PYRAMICATA	0	0.0	1	0.060
MOLLUSCA (SHELLFISH) GASTROPODA (SNAILS)				
ACTEOCINA CANDEI	1	0.114	0	0.0
ANACFIS FLORICANA	0	0.0	1	0.060
CYLICHNELLA BICENTIATA	3	0.341	20	1.201
NATICA FUSILLA	5	0.568	29	1.742
OLIVELLA MINUTA	0	0.0	2	0.120
CLIVELLA MUTICA	2	0.227	2	0.120
POLINICES DUPLICATUS	3	0.341	1	0.060
TERBERA DISLOCATA	1	0.114	2	0.120
TURBONILLA SP.	2	0.227	11	0.661
PELECYPODA (CLAMS)				
CUNA DALLI	0	0.0	1	0.060
ERVILIA CONCENTRICA	2	0.227	5	0.300
LEPTON SP.	7	0.795	9	0.541
LUCINA MULTILINEATA	8	0.909	3	0.180
PITAF SIMPSONI	17	1.932	11	0.661
STRIGILLA MIRABILIS	5	0.568	6	0.360
TELLINA IRIS	0	0.0	1	0.060
TELLINA TEXANA	40	4.545	255	15.315
TELLINA VERSICOLOR	94	10.682	90	5.405
TRACEYCARDIUM MURICATUM	0	0.0	1	0.060
ANNELIDA (SEGMENTED WORMS)				
POLYCHAETA				
ARMANDIA AGILIS	1	0.114	95	5.706
ARMANDIA MACULATA	2	0.227	3	0.180
ERANIA CLAVATA	0	0.0	1	0.060
CAPITELLA CAPITATA	0	0.0	1	0.060
CHONE SP.	0	0.0	1	0.060
CISPPIO UNCINATA	2	0.227	1	0.060
ETEONE LACTEA	0	0.0	1	0.060
GLYCERA AMERICANA	6	0.682	20	1.201
GRUPELLEPIIS MEXICANA	0	0.0	1	0.060
CRYPTIS VITTATA	0	0.0	1	0.060
HAPLOSCOLOPLOS FOLIOSUS	0	0.0	1	0.060
LOIMIA MEDUSA	0	0.0	1	0.060
LUMBEINERIS CRUZENSIS	62	7.045	286	17.177
MAGELCNA PETTIBONEAE	1	0.114	0	0.0
MAGELCNA RIOJAI	29	3.295	13	0.781
MAGELCNA SP.	1	0.114	1	0.060
MESOCOETOPTERUS SAGITTARIUS	13	1.477	10	0.601
NEANTHES ACUMINATA	9	1.023	3	0.180

PEPPERTREE CONDOMINIUM (STATION 5) - CONTROL & EXPERIMENTAL
 7/27/77
 (CONTINUED)

SPECIES	NO. OF IND. (C.) TOTAL	PERCENT	NO. OF IND. (E.) TOTAL	PERCENT
<u>NEPHTYS BUCERA</u>	50	5.682	22	1.321
<u>NEPHTYS PICTA</u>	1	0.114	5	0.300
<u>ONUPHIS EREMITA OCULATA</u>	28	3.182	15	0.901
<u>ORBINIA RISERI</u>	0	0.0	9	0.541
<u>PARACNIS FULGENS</u>	11	1.250	0	0.0
<u>PHYLLODOCE ARENAE</u>	3	0.341	15	1.141
<u>PRIONOSPIRO CRISTATA</u>	2	0.227	3	0.180
<u>RULLIERINEREIS MEXICANA</u>	0	0.0	1	0.060
<u>SCOLELEPIS TEXANA</u>	0	0.0	1	0.060
<u>SCOLOPICS ARMIGER</u>	0	0.0	1	0.060
<u>SIGALION ARENICOLA</u>	0	0.0	2	0.120
<u>SIGAMBA BASSI</u>	0	0.0	2	0.120
<u>SPIO PETTIBONEAE</u>	20	2.273	7	0.420
<u>SPIOPHANES BOMBYX</u>	6	0.682	5	0.541
<u>STREPTOSYLLIS ARENAE</u>	4	0.455	0	0.0
 <u>SIPUNCULIDA (PEANUT WORMS)</u>				
<u>UNIDENTIFIED SP.</u>	1	0.114	3	0.180
 <u>ARTHROPODA (CRUSTACEANS)</u>				
<u>AMPHIPODA</u>				
<u>ACANTHOHAUSTORIUS SP.</u>	5	1.023	0	0.0
<u>AMPELISCA VERRILLI</u>	0	0.0	1	0.060
<u>LISTRIELLA SP.</u>	0	0.0	2	0.120
<u>LYSIANOPSIS SP.</u>	0	0.0	1	0.060
<u>MONOCULODES SP.</u>	5	1.023	13	0.781
<u>PROTOHAUSTORIUS SP.</u>	246	27.955	245	14.715
<u>PSEUDCHALSTORIUS SP.</u>	10	1.136	66	3.964
<u>PSEUDOPLATYISCHNOPUS SP.</u>	37	4.205	152	9.129
<u>SYNCHELIDIUM SP.</u>	15	1.705	15	0.901
<u>ANOMURA</u>				
<u>ALBLINEA PARETII</u>	3	0.341	1	0.060
<u>BRACHYLRA</u>				
<u>PINNIXIA CRISTATA</u>	4	0.455	0	0.0
<u>PINNOTHERES SP.</u>	3	0.341	5	0.300
<u>PORTUNUS SP.</u>	2	0.341	2	0.120
<u>CALLIANASSIDAE</u>				
<u>CALLIANASSA JAMAICENSIS</u>	0	0.0	4	0.240
<u>CARIDEA</u>				
<u>HIPPOCLYTE PLEURACANTHA</u>	0	0.0	2	0.120
<u>PROCESSA HEMPHILLI</u>	8	0.909	2	0.120
<u>CLIMACEA</u>				
<u>CYCLAPSIS SP.</u>	18	2.045	8	0.480
<u>CYCLAPSIS VARIANS</u>	14	1.591	40	2.402
<u>OXYLEOSTYLIS SMITHI</u>	0	0.0	4	0.240
<u>UNIDENTIFIED SP.</u>	0	0.0	2	0.120
<u>ISCOPDA</u>				
<u>ANCINA DEPRESSA</u>	3	0.341	0	0.0
<u>CHIRIODEA EXCAVATA</u>	5	1.023	0	0.0
<u>LEPTOSTRACA</u>				
<u>NEBALIA SP.</u>	0	0.0	5	0.300
<u>MYSIACEA</u>				
<u>PRAUNUS FLEXUOSUS</u>	3	0.341	0	0.0
<u>OSTRACELLA</u>				
<u>UNIDENTIFIED SP.</u>	4	0.455	2	0.120
<u>PEMIDEA</u>				
<u>TRACHYPENAEUS CONSTRICTUS</u>	1	0.114	3	0.180
 <u>ECHINODERMATA</u>				
<u>ECHINICIDEA (SAND COLLARS; URCHINS)</u>				
<u>MELLITA QUINQUESPERFORATA</u>	0	0.0	2	0.120

PEPPERTREE CONDOMINIUM (STATION 5) - CONTROL & EXPERIMENTAL

7/27/77
(CONTINUED)

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
HOLOTHOPOIDEA (SEA CUCUMBERS)				
UNIDENTIFIED SP.	0	0.0	13	0.781
OPHIURICIDEA (BRITTLE STARS)				
<u>OPHICOPHRAGMUS MOOREI</u>	0	0.0	5	0.300
<u>OPHICOPHRAGMUS URDEMANI</u>	4	0.455	0	0.0
UNIDENTIFIED SP.	1	0.114	7	0.420
HEMICHORDATA				
ENTEROPNEUSTA (ACORN WORMS)				
UNIDENTIFIED SP.	0	0.0	1	0.060
CEPHALOCHORDATA (LANCELETS)				
<u>FRANCHIOSTOMA FLORIDA</u>	2	0.227	23	1.381
TOTALS				
NO. SPECIES	880	57	1665	80
NO. IND. PER M ²		1408		2664
S-W INDEX - H ¹ (LN)		2.9751		2.9427
EVENNESS - J		0.7359		0.6715

BLUE DOLPHIN MOTEL (STATION 6) - CONTROL & EXPERIMENTAL
7/28/77

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
Cnidaria				
ACTINIANIA (SEA ANEMONES)				
UNIDENTIFIED SP.	1	0.064	0	0.0
PLATYHELMINTHES				
TURBELLARIA (FLATWORMS)				
UNIDENTIFIED SP.	0	0.0	1	0.053
NEMERTINEA (RIBBON WORMS)				
UNIDENTIFIED SP.	33	2.126	57	3.006
PHORONIDA (PHORONIDS)				
PHORONIS ARCHITECTA	0	0.0	1	0.053
BRACHIOPODA (LAMP SHELLS)				
GLOTTIDIA PYRAMIDATA	0	0.0	19	1.002
MOLLUSCA (SHELLFISH)				
GASTROPODA (SNAILS)				
CYLICHNELLA BIDENTATA	24	1.546	31	1.635
NATICA PUSILLA	1	0.064	15	0.791
OLIVELLA MINUTA	2	0.129	2	0.105
OLIVELLA MUTICA	1	0.064	4	0.211
POLINICES DUPLICATUS	0	0.0	1	0.053
TEREERA CONCAVA	1	0.064	0	0.0
TURBONILLA CONRADII	3	0.193	0	0.0
TURBONILLA SP.	11	0.709	6	0.316
PELCYPODA (CLAMS)				
ERVILIA CONCENTRICA	4	0.258	1	0.053
LEPTIN SP.	13	0.838	3	0.158
LUCINA MULTILINEATA	18	1.160	74	3.903
PERIFLUMA MARGARITACEUM	0	0.0	2	0.105
PITAF SIMONSENI	53	3.415	17	0.897
STRIGILLA MIRABILIS	4	0.258	5	0.264
TELLINA AEQUISTRIGATA	0	0.0	1	0.053
TELLINA TEXANA	217	13.982	137	7.226
TELLINA VERSICOLOR	108	6.959	98	5.169
TRACHYCARDIUM MURICATUM	0	0.0	1	0.053
ANNELIDA (SEGMENTED WORMS)				
OLIGOCHAETA				
UNIDENTIFIED SP.	4	0.258	1	0.053
POLYCHAETA				
APOPROIONOSPIO PYGMAEA	2	0.129	4	0.211
ARICIDEA FRAGILIS	1	0.064	5	0.264
ARMANDIA AGILIS	36	2.320	87	4.589
ARMANCIA MACULATA	20	1.289	26	1.371
BRANIA CLAVATA	0	0.0	4	0.211
BRANIA WELLFLEETENSIS	4	0.258	2	0.105
CAPITELLA CAPITATA	1	0.064	53	2.795
CHONE SP.	1	0.064	2	0.105
DISPIO UNCINATA	1	0.064	0	0.0
ETEONE LACTEA	1	0.064	2	0.105
GLYCERA AMERICANA	13	0.838	6	0.316
GONIACA LITTOREA	0	0.0	1	0.053
GYPTIS VITTATA	0	0.0	10	0.527
HAPLOCYCLOPS ROBUSTUS	0	0.0	1	0.053
LOIMIA MEDUSA	1	0.064	1	0.053
LUMBFINEFIS CRUZENSIS	195	12.564	208	10.970
MAGELCNA RIOJAI	3	0.193	1	0.053

BLUE DOLPHIN MOTEL (STATION 6) - CONTROL & EXPERIMENTAL
 7/28/77
 (CONTINUED)

SPECIES	NO. OF IND.	(C.) TOTAL PERCENT	NO. OF IND.	(E.) TOTAL PERCENT
<u>MAGELINA SP.</u>	12	0.773	8	0.422
<u>MESOCHEAETOPTERUS SAGITTARIUS</u>	9	0.580	12	0.633
<u>MINUSPIO CIRRIFERA</u>	1	0.064	0	0.0
<u>NEANTES ACUMINATA</u>	0	0.0	28	1.477
<u>NEPHTYS BUCERA</u>	35	2.255	26	1.371
<u>NEPHTYS PICTA</u>	18	1.160	49	2.584
<u>ONUPHIS EREMITA OCULATA</u>	8	0.515	9	0.475
<u>ORBINIA RISERI</u>	2	0.129	7	0.369
<u>PARANAITES SPECIOSA</u>	0	0.0	2	0.105
<u>PARACNIS FULGENS</u>	17	1.095	8	0.422
<u>PHYLLODOCE ARENAE</u>	6	0.387	19	1.002
<u>POLYCORAS SOCIALIS</u>	2	0.129	0	0.0
<u>POLYCORAS TETRABRANCHIA</u>	0	0.0	1	0.053
<u>PRIONOSPIRO CRISTATA</u>	4	0.258	10	0.527
<u>RULLIERINERIS MEXICANA</u>	0	0.0	2	0.105
<u>SCOLELEPIS TEXANA</u>	0	0.0	1	0.053
<u>SCOLOPLOS ARMIGER</u>	4	0.258	2	0.105
<u>SCOLOPLOS RUBRA</u>	2	0.129	0	0.0
<u>SIGAMERA BASSI</u>	1	0.064	0	0.0
<u>SPIO PETTIBONEAE</u>	7	0.451	15	0.791
<u>SPIONOPHANES BOMBYX</u>	11	0.709	13	0.686
 SIPUNCULIDA (PEANUT WORMS)				
UNIDENTIFIED SP.	4	0.258	4	0.211
 ARTHROPODA (CRUSTACEANS)				
ANPHIPODA				
<u>ACANTHOHAUSTORIUS SP.</u>	1	0.064	0	0.0
<u>AMPELTISCA ABDITA</u>	0	0.0	1	0.053
<u>ERICHTHONIUS SP.</u>	0	0.0	1	0.053
<u>LEMBOS SP.</u>	0	0.0	1	0.053
<u>LISTIELLA SP.</u>	5	0.322	3	0.158
<u>MELITA APPENDICULATA</u>	0	0.0	1	0.053
<u>MICRCRFRCTOPUS SP.</u>	0	0.0	24	1.266
<u>NONCULCULDES SP.</u>	9	0.580	31	1.635
<u>PROCHAUSTORIUS SP.</u>	307	19.781	245	12.922
<u>PSEUDCHAUSTORIUS SP.</u>	20	1.289	25	1.319
<u>PSEUDOCPLATYISCHNOPUS SP.</u>	114	7.345	50	2.637
<u>SYNCHELIDIUM SP.</u>	23	1.482	4	0.211
BRACHYURA				
<u>CALLINETES SAPIDUS</u>	0	0.0	2	0.105
<u>DISSODACTYLUS MELLITAE</u>	13	0.838	30	1.582
<u>PINNIXIA SAYANA</u>	0	0.0	9	0.475
CALLIANASSIDAE				
<u>CALLIANASSA JAMAICENSIS</u>	4	0.258	4	0.211
CARIDEA				
<u>HIPPOLYTE PLEURACANTHA</u>	0	0.0	5	0.264
<u>PROCESSA HEMPHILLI</u>	1	0.064	5	0.264
CUMACEA				
<u>CYCLAFSIS SP.</u>	25	1.611	19	1.002
<u>CYCLAPSIS VARIANS</u>	38	2.448	199	10.496
<u>CYXYUFCSSTYLIS SMITHI</u>	3	0.193	8	0.422
LEPTOSTRACA				
<u>NEBALIA SP.</u>	4	0.258	26	1.371
OSTRACODA				
UNIDENTIFIED SP.	17	1.095	4	0.211
STOMATOPODA				
<u>ACANTHOSQUILLA BIMINIENSIS</u>	0	0.0	1	0.053
 ECHINODERMATA				
ECHINOIDEA (SAND DOLLARS; URCHINS)				

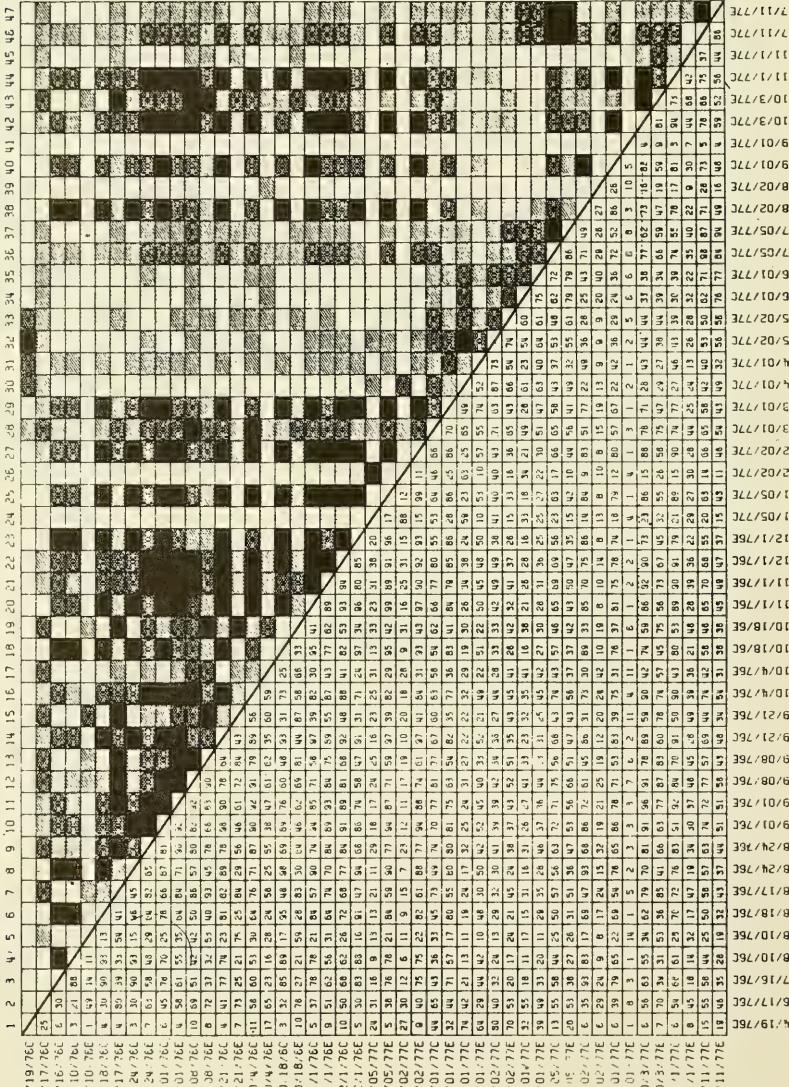
BLUE DOLPHIN MOTEL (STATION 6) - CONTROL & EXPERIMENTAL
 7/28/77
 (CONTINUED)

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
<u>MELLITA QUINQUESPERFORATA</u>	18	1.160	35	1.846
<u>OPHIURIDEA (BRITTLE STARS)</u>				
<u>OPHICPHRAGMUS WURDEMANI</u>	0	0.0	3	0.158
UNIDENTIFIED SP.	3	0.193	9	0.475
 HEMICORDATA				
<u>ENTEROPNEUSTA (ACRON WORMS)</u>				
UNIDENTIFIED SP.	1	0.064	2	0.105
 CEPHALOCHORDATA (LANCELETS)				
<u>BRANCHIOSTOMA FLORIDAE</u>	26	1.675	43	2.268
 TOTALS	1552		1896	
NO. SPECIES		66		83
NO. IND. PER M ²		2483		3034
S-W INDEX - H'(LN)		3.0020		3.3704
EVENNESS - J		0.7165		0.7627

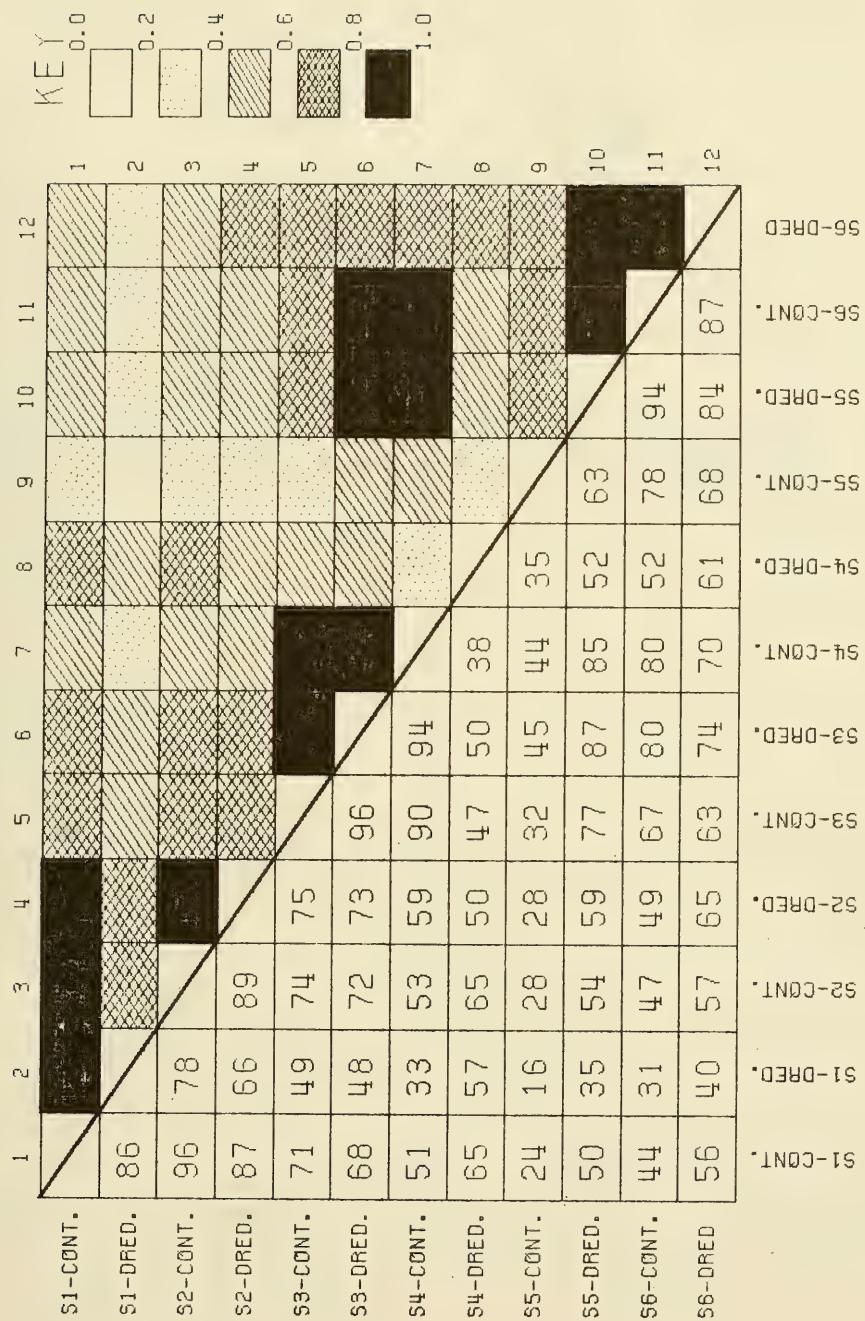
APPENDIX D
FAUNAL SIMILARITY MATRICES

Similarity matrices for time-sequence samples at station 1, and one time sampling at stations 1 to 6 (Morisita's Index without transformations or standardizations, and with matrix values multiplied by 100)--beach restoration project, Panama City Beach, Florida (November 1974 to November 1977).

TREASURE ISLAND (4/76-11/77)



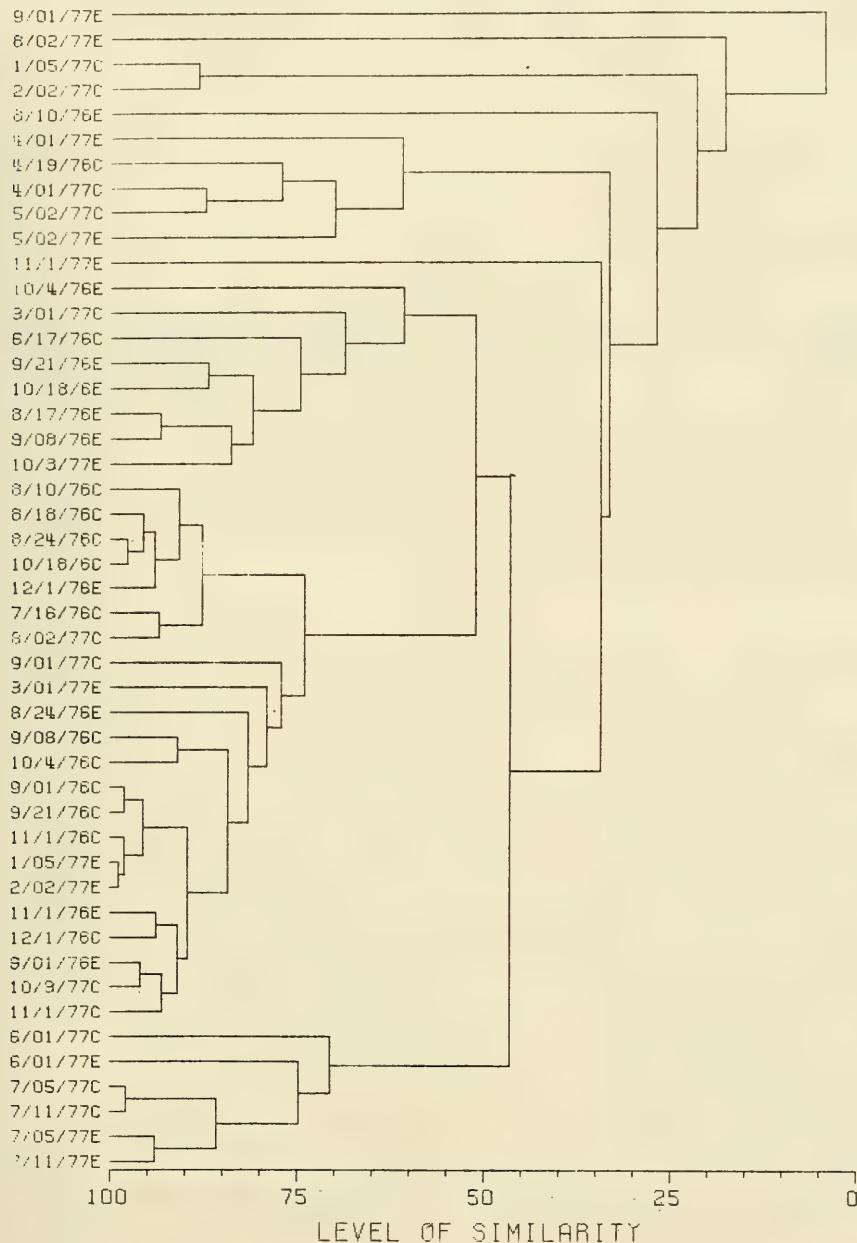
STATIONS 1-6 (7/11/77)



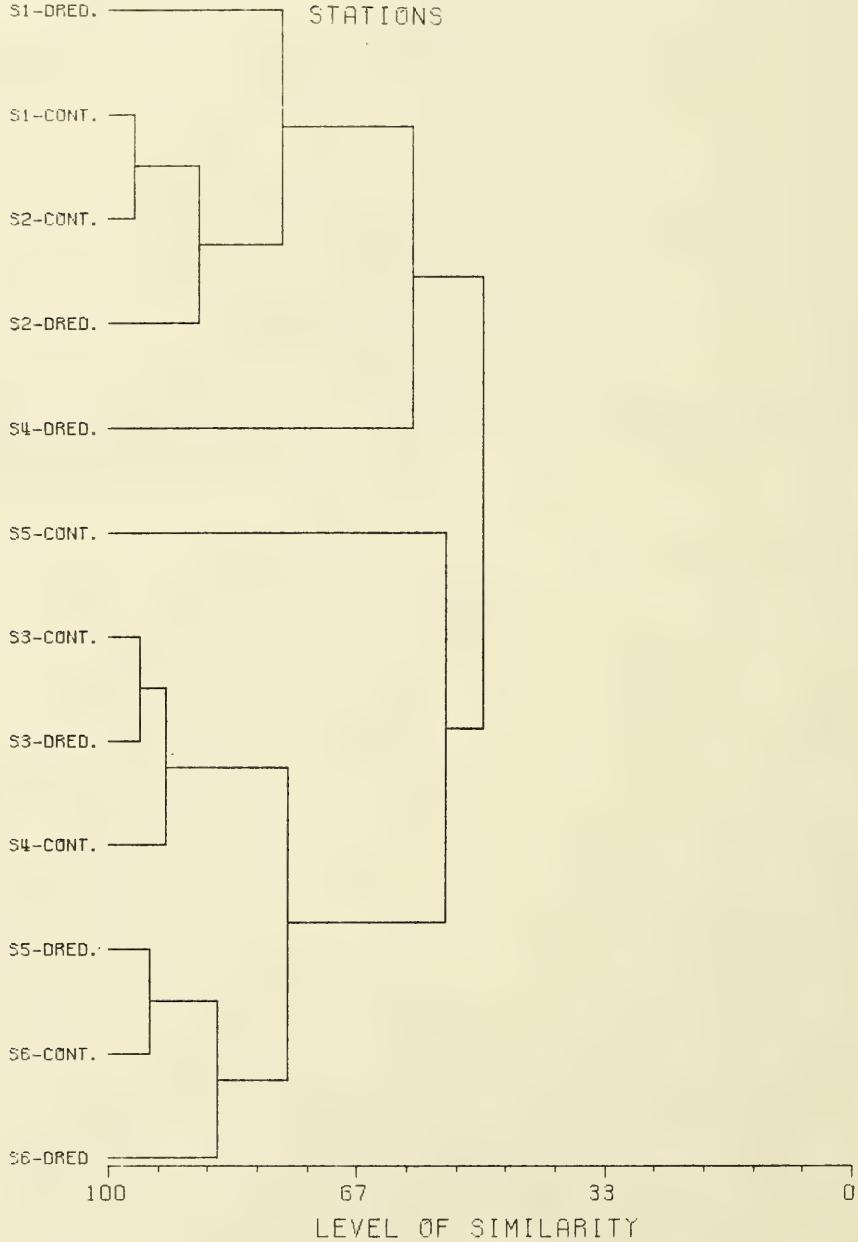
APPENDIX E
FAUNAL CLASSIFICATION ANALYSES

Classification analyses for time-sequence samples at station 1, and one-time sampling at stations 1 to 6 (Morisita's Index without transformations or standardizations)--beach restoration project, Panama City Beach, Florida (November 1974 to November 1977).

TREASURE ISLAND DREDGE EFFECTS (APRIL 1976- NOVEMBER 1977)



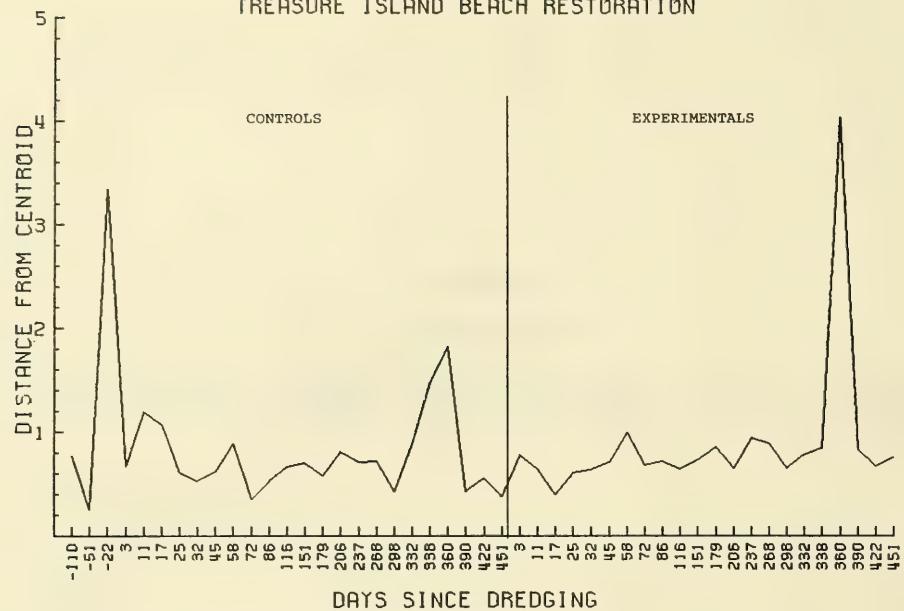
BEACH RESTORATION - ONE YEAR AFTER DREDGING AT SIX
S1-DRED.



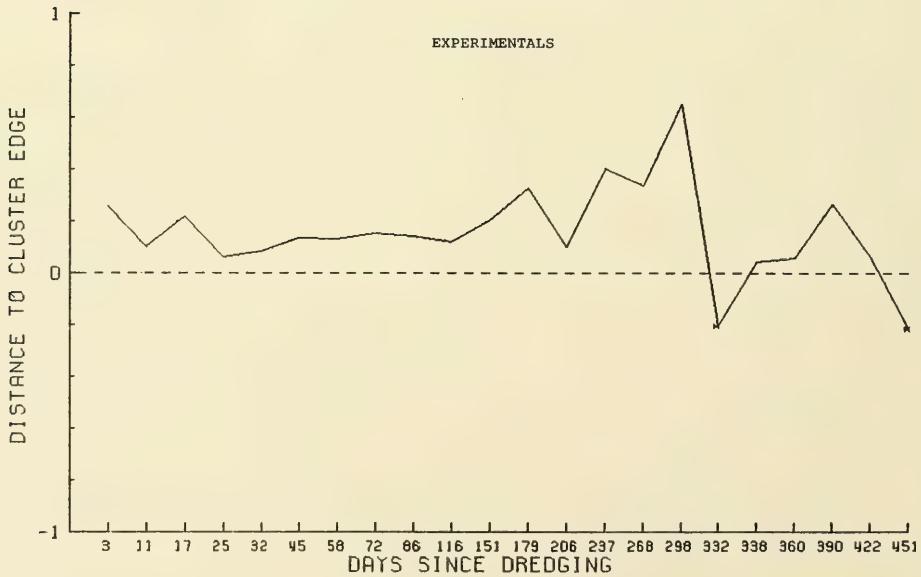
APPENDIX F
STABILITY ANALYSES

Stability analyses for time-sequence samples at station 1 showing sample variations and time to faunal recovery--beach restoration project, Panama City Beach, Florida (November 1974 to November 1977).

TREASURE ISLAND BEACH RESTORATION



TREASURE ISLAND BEACH RESTORATION



Saloman, Carl H.
Benthic community response to dredging borrow pits, Panama City Beach, Florida / by Carl H. Saloman, Steven P. Naughton, and John L. Taylor.—Fort Belvoir, Va. : U.S. Army Coastal Engineering Research Center ; Springfield, Va. : available from NTIS, 1982.
[138] p. : ill. ; 28 cm.—(Miscellaneous report ; no. 82-3)
Prepared for Coastal Engineering Research Center by National Marine Fisheries Service, Southeast Fisheries Center; Dacm72-81-M-0198.
Report gives biological and physical oceanographic data from baseline work, and studies of dredged and undredged sediments before and after dredging (9-meter contour) at Panama City Beach, Florida. Analyses of hydrology, sediments, and benthos are included.
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1. Beach nourishment—Environmental aspects—Florida—Panama City Beach. 2. Benthos. 3. Dredging. 4. Panama City Beach (Fla.).
I. Naughton, Steven P. II. Taylor, John L. III. Coastal Engineering Research Center (U.S.). IV. United States. National Marine Fisheries Service. V. Title. VI. Series: Miscellaneous report (Coastal Engineering Research Center (U.S.)) ; no. 82-3
TC203 .U581mr no. 82-3 627

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